TISDALE WEIR REHABILITATION AND FISH PASSAGE PROJECT

Final Environmental Impact Report

State Clearinghouse Number 2019049093

Prepared for
California Department of Water Resources

August 2021

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CHAPTER 1
Introduction and List of Commenters

1.1 Purpose of this Document

This Final Environmental Impact Report (FEIR) has been prepared for the Tisdale Weir Rehabilitation and Fish Passage Project (Proposed Project) in accordance with the California Environmental Quality Act (CEQA) and, together with the Draft Environmental Impact Report (DEIR) (November 2020; SCH #2019049093) and the DEIR appendices, constitutes the EIR for the Proposed Project that will be reviewed and considered by the California Department of Water Resources (DWR) prior to approving the project.

Written comments on the DEIR were received by DWR during the public comment period from November 20, 2020, through February 1, 2021. Verbal comments were also received by DWR during a virtual CEQA public meeting on December 8, 2020 (see Appendix A for the meeting transcript).

This document includes all agency and public written comments received on the DEIR and includes written responses to each comment received. Also included are changes to the text of the DEIR, either in response to written comments or initiated by DWR staff. The responses and text changes correct, clarify, and amplify text in the DEIR, as appropriate. These changes do not alter the conclusions of the DEIR.

The Tisdale Weir Rehabilitation and Fish Passage Project DEIR and related documents can be found on DWR's website:

https://water.ca.gov/Programs/Flood-Management/Flood-Projects/Tisdale-Weir

1.2 Summary of the Tisdale Weir Rehabilitation and Fish Passage Project

Tisdale Weir is one of five major overflow weirs in the Sacramento River Flood Control Project. It is generally the first to overflow and the last to stop flowing. The weir is a fixed-elevation, ungated overflow structure that was originally designed to spill and convey up to 38,000 cubic feet per second of excess Sacramento River floodwaters into the Tisdale Bypass, a 4-mile-long channel that flows eastward to the Sutter Bypass.

DWR operates and maintains the Tisdale Bypass in accordance with Section 8361 of the California Water Code. Maintenance activities include: (1) clearing sediment vegetation;

(2) repairing and guarding against erosion and subsidence; (3) repairing flood risk reduction facilities; and (4) conducting other maintenance of State facilities as needed. The Proposed Project would allow continuation of these maintenance activities within the regulatory limitations imposed by the required permits, and would integrate structural rehabilitation of Tisdale Weir with installation of fish passage facilities to reduce fish stranding at the weir and improve fish passage through the weir to the Sacramento River.

1.3 Project Actions

Adoption of the Proposed Project is anticipated to include, but may not be limited to, the following DWR actions:

- Certification of the EIR to determine that the EIR was completed in compliance with the requirements of CEQA, that the decision-making body has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgement of DWR;
- Adoption of a Mitigation Monitoring and Reporting Program (MMRP), which specifies the methods for monitoring mitigation measures required to eliminate or reduce the project's significant effects on the environment; and
- Adoption of Findings of Fact.

1.4 Organization of the Final EIR

The FEIR is organized as follows:

Chapter 1 – Introduction and List of Commenters: This chapter summarizes the project under consideration and describes the contents of the FEIR. This chapter also contains a list of all of the agencies, organizations, and individuals who submitted comments on the DEIR during the public review period, presented in order by agency, organization, individual, and date received.

Chapter 2 – Revisions to the DEIR: This chapter summarizes text changes made to the DEIR in response to comments made on the DEIR. Changes to the text of the DEIR are shown by either ~~strikethrough~~ where text has been deleted, or <u>double underline</u> where new text has been inserted.

Chapter 3 – Comments and Responses: This chapter contains the verbal comments and comment letters received on the DEIR, followed by responses to each individual comment. Each comment letter is presented with brackets indicating how the letter has been divided into individual comments. Each comment is given a binomial with the letter type and number appearing first, followed by the comment number. For example, comments in Letter F1 are numbered F1-1, F1-2, F1-3, and so on. Immediately following the letter are responses, each with binomials that correspond to the bracketed comments.

In some cases, similar comments were made in multiple comment letters. To address comments that have similar themes, master comment responses are provided at the beginning of the chapter, and individual responses may refer the reader to the master comment response(s).

Some comments that were submitted to DWR do not pertain to substantial environmental issues or do not address the adequacy of the analysis contained in the DEIR. Responses to such comments, though not required, are included to provide additional information. When a comment does not directly pertain to environmental issues analyzed in the DEIR, does not ask a question about the adequacy of the analysis contained in the DEIR, expresses an opinion related to the merits of the Proposed Project, or does not question an element of or conclusion of the DEIR, the response notes the comment and may provide additional information where appropriate. Some comments express opinions about the merits or specific aspects of the Proposed Project and these are included in the FEIR for consideration by the decision-makers.

Chapter 4 – Mitigation Monitoring and Reporting Program: This chapter contains the MMRP to guide DWR in its implementation and monitoring of measures adopted in the EIR, and to comply with the requirements of Public Resources Code Section 21081.6(a).

1.5 Public Participation and Review

DWR has complied with all noticing and public review requirements of CEQA. This compliance included notification of all responsible and trustee agencies and interested groups, organizations, and individuals that the DEIR was available for review. The following list of actions took place during the preparation, distribution, and review of the Draft EIR:

- A Notice of Preparation (NOP) for the EIR was filed with the State Clearinghouse on April 15, 2019 (SCH# 2019049093). The official 30-day public review comment period for the NOP ended on May 15, 2019. The NOP was distributed to federal, State, and local agencies (i.e., reclamation and levee districts); to landowners adjacent to the location of the Proposed Project; and to other interested parties. The NOP was also published in the *Sacramento Bee* and *Appeal Democrat* and on DWR's website, and was filed at the Sutter County Clerk's office.

- A public scoping meeting for the EIR was held on April 25, 2019.

- A Notice of Completion (NOC) and copies of the DEIR were filed with the State Clearinghouse on November 20, 2020. A 62-day public review period for the DEIR ended on February 1, 2021 (extended from January 15, 2021). A Notice of Availability (NOA) for the DEIR was published in the *Sacramento Bee* and *Appeal Democrat* and sent to appropriate public agencies and interested parties. The DEIR was also distributed to federal, State, and local agencies; to landowners adjacent to the location of the Proposed Project; and to other interested parties, and was published on DWR's website.

- Paper copies of the DEIR were available for review at the following location:

  California Department of Water Resources
  Division of Flood Management, Flood Maintenance Office
  3310 El Camino Avenue, Room 140
  Sacramento, CA 95821

- A virtual CEQA public meeting was held on December 8, 2020, to give the public an opportunity to hear information on the CEQA process and the DEIR and provide verbal comments on the DEIR.

1.6 CEQA Certification and Project Approval

Before DWR makes a decision with regard to the Proposed Project, State CEQA Guidelines Section 15090(a) requires that DWR first certify that the EIR has been completed in compliance with CEQA, that DWR has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment and analysis of DWR.

In the event DWR approves the Proposed Project, CEQA requires that it file a Notice of Determination (NOD) and adopt appropriate findings as set forth in State CEQA Guidelines Section 15091. Under State CEQA Guidelines Section 15092, a lead agency may only approve or carry out a project subject to an EIR if it determines that: (1) the project will not have a significant effect, or (2) the agency has eliminated or substantially lessened all significant effects on the environment where feasible and any remaining significant effects on the environment that are found to be unavoidable are acceptable due to overriding considerations.

1.7 List of Commenters

DWR received three verbal comments and 12 written comment letters during the comment period on the DEIR for the Proposed Project. **Table 1-1** indicates the letter type (e.g., federal agency, State agency, local agency, organization, or individual/company) and numerical designation for each comment letter, the author of the comment letter, and the date of the comment letter.

TABLE 1-1: VERBAL COMMENTS AND COMMENT LETTERS REGARDING THE TISDALE WEIR REHABILITATION AND FISH PASSAGE PROJECT DEIR

Letter #	Entity	Author(s) of Comment Letter/Email	Date of Comment Letter/Email
Federal Agencies			
F1	U.S. Fish and Wildlife Service	James Earley, Fish Biologist/CVPIA Habitat Restoration Coordinator, Pacific Southwest Region	January 25, 2021
F2	U.S. Fish and Wildlife Service	James Earley, Fish Biologist/CVPIA Habitat Restoration Coordinator, Pacific Southwest Region	February 1, 2021
State Agencies			
S1	California State Lands Commission	Christopher Huitt	December 8, 2020 Public Meeting Comment (transcript pages 17 and 18)
S2	California State Lands Commission	Nicole Dobroski, Chief, Division of Environmental Planning and Management	January 6, 2021
S3	California Department of Fish and Wildlife	Kevin Thomas, Regional Manager, North Central Region	January 28, 2021
S4	Central Valley Flood Protection Board	Andrea Buckley, Chief, Environmental Services and Land Management Branch	January 29, 2021
Local Agencies			
L1	Sutter County Development Services	N/A	January 15, 2021
L2	Sutter County Development Services	Nick Ramos, PE, CFM, Associate Civil Engineer	January 19, 2021
Organizations			
O1	Somach Simmons and Dunn for Sutter Bypass–Butte Slough Water Users' Association	Kelly M. Taber, Attorney	February 1, 2021
O2	California Farm Bureau Federation	Justin Fredrickson, Environmental Policy Analyst	February 1, 2021
Individuals/Companies			
I1		Francis Coats	November 11, 2020
I2	Creps Farm LLC	Julie Bradford	December 8, 2020 Public Meeting Comment (transcript page 16)
I3	Montna Farms	Jon Munger	December 8, 2020 Public Meeting Comment (transcript pages 18 and 19)
I4	Creps Farm LLC	Julie Bradford	February 1, 2021
I5	Somach Simmons and Dunn for A&G Montna Properties LP	Kelley M. Taber, Attorney	February 1, 2021

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CHAPTER 2
Revisions to the Draft EIR

2.1 Introduction

This chapter describes changes made to the Proposed Project since publication of the DEIR, as well as text changes made to the DEIR either in response to a comment letter, initiated by DWR staff, or in response to a modification to the Proposed Project.

Under CEQA, recirculation of all or part of an EIR may be required if significant new information is added after public review and prior to certification. According to State CEQA Guidelines Section 15088.5(a), new information is not considered significant "unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement." More specifically, the State CEQA Guidelines define significant new information as including:

- A new significant environmental impact resulting from the project or from a new mitigation measure proposed to be implemented.
- A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
- A feasible project alternative or mitigation measure considerably different from those others previously analyzed would clearly lessen the environmental impacts of the project, but the project proponents decline to adopt it.
- The Draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

The text changes described below update, refine, clarify, and amplify the project information and analyses presented in the DEIR. No new significant impacts are identified, and no information is provided that would involve a substantial increase in the severity of a significant impact that would not be mitigated by measures agreed to by DWR. In addition, no new or considerably different DWR alternatives or mitigation measures have been identified. Finally, there are no changes or set of changes that would reflect fundamental inadequacies in the DEIR. Therefore, recirculation of any part of the DEIR is not required.

2.2 Text Changes to the DEIR

This section summarizes text changes made to the DEIR either in response to a comment letter, initiated by DWR staff, or in response to a modification to the Proposed Project. New text is indicated in double underline and text to be deleted is reflected by ~~strike through~~. Text changes are presented in the page order in which they appear in the DEIR.

The text revisions provide clarification, amplification, and corrections that have been identified since publication of the DEIR. The text changes do not result in a change in the analysis or conclusions of the DEIR.

Executive Summary

Page ES-11 and ES-12, Impact 3.3-2, Mitigation Measure 3.3.2 a-c in Table ES-2, Summary of Impacts and Mitigation Measures and in Section 3.3 Air Quality, page 3.3-16 and 3.3-17 were incorrectly numbered as 3.3-1a, 3.3-1b and 3.3-1c. The numbers are revised as 3.3-2a, 3.3-2b, and 3.3-2c.

Page ES-15, Impact 3.4-3, Mitigation Measure 3.4-3e in Table ES-2, Summary of Impacts and Mitigation Measures, is revised to read:

3.4-3 (cont.)	**Mitigation Measure 3.4-3e (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If a GGS individual is observed within the project footprint, DWR will stop work and notify a designated biologist immediately. This biologist will be either a USFWS representative, a biologist holding a USFWS 10(a)(1)(A) permit, or if DWR has obtained a take permit under CESA, a designated biologist with knowledge and experience in the biology, natural history, capture, and handling of GGS. The snake will be allowed to leave on its own, and the designated biologist will remain in the area for the remainder of the workday to ensure that the snake is not harmed. Alternatively, with prior approval by CDFW and USFWS, the designated biologist may capture the snake and relocate it unharmed to suitable habitat at least 200 feet from the project area. DWR will notify CDFW and USFWS by telephone or email within 24 hours of a GGS observation during project activities. If the snake does not voluntarily leave the project area and cannot be captured and relocated unharmed, project activities will remain halted to prevent harm to the snake, and CDFW and USFWS will be consulted to identify next steps. DWR will implement the measures recommended by CDFW and USFWS before resuming project work in the area.

Page ES-15, Impact 3.4-4, Mitigation Measure 3.4-4b in Table ES-2, Summary of Impacts and Mitigation Measures, is revised to read:

3.4-4: Implementation of the Proposed Project could	**Mitigation Measure 3.4-4b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** A designated biologist will conduct a preconstruction survey

cause disturbance or mortality of and loss of suitable habitat for western pond turtle.	within 48 hours ~~7 days~~ before the establishment of staging areas and the start of construction and maintenance activities.

Page ES-16, Impact 3.4-4, Mitigation Measure 3.4-4c in Table ES-2, Summary of Impacts and Mitigation Measures, is revised to read:

3.4-4 (cont.)	**Mitigation Measure 3.4-4c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Should a western pond turtle be observed during the preconstruction survey and it is determined that relocation is necessary, a relocation plan will be developed by a designated biologist in consultation with CDFW. The biologist will identify the location using GPS coordinates. DWR will revisit these locations within 8 hours of ground disturbance. A designated biologist may relocate the turtle found within the construction footprint to suitable habitat away from the construction zone.

Page ES-17, Impact 3.4-5, Mitigation Measure 3.4-5d in Table ES-2, Summary of Impacts and Mitigation Measures, is revised to read:

3.4-5 (cont.)	**Mitigation Measure 3.4-5d (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** ~~If vegetation removal is to begin during the nesting season for Swainson's hawk (between March 1 and September 15), a~~ designated biologist will conduct a minimum of one protocol-level preconstruction survey. The survey(s) will occur during the recommended survey periods for the nesting season that coincides with the start of construction activities, in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee, 2000). Where legally permitted, the designated biologist will conduct surveys for nesting Swainson's hawk within 0.25 mile of the project area.

Page ES-17, Impact 3.4-5, Mitigation Measure 3.4-5e in Table ES-2, Summary of Impacts and Mitigation Measures, is revised to read:

3.4-5 (cont.)	**Mitigation Measure 3.4-~~5~~5e ~~d~~ (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If active Swainson's hawk nests are found within 0.5 ~~0.25~~ mile of construction or maintenance activities, the findings will be reported to CDFW following the preconstruction survey. For purposes of this avoidance and minimization requirement, "construction activities" are defined to include the operation of heavy equipment during construction (use of cranes or draglines, new rock-crushing activities) or other project-related activities that could cause nest abandonment or forced

	fledging within 0.5 ~~0.25~~ mile of a nest site between March 1 and September 15. Should an active nest be present within 0.5 ~~0.25~~ mile of a construction area, DWR will consult with CDFW to establish appropriate avoidance measures; determine whether high- visibility construction fencing will be erected around the buffer zone; and implement a monitoring and reporting program that includes monitoring either continuously or periodically, depending on the construction or maintenance activities and level of disturbance, before any construction activities occur within 0.5 ~~0.25~~ mile of the nest. Should the designated biologist determine that the construction activities are disturbing the nest, the biologist will halt construction activities until DWR consults with CDFW. If the biologist determines that construction activities cause or contribute to a bird being flushed from the nest, or observes other signs of disturbance of a nesting bird at a level that has potential to cause nest failure, the existing buffer distance will be reevaluated by the qualified biologist and in consultation with CDFW and revised or increased as necessary. The construction activities will not resume until CDFW determines that they will not result in abandonment of the nest site. Should the designated biologist determine that construction activities within the buffer zone have not disturbed the nest, DWR will report to CDFW summarizing the survey results within 30 days after the final monitoring event, and no further avoidance and minimization measures for nesting habitat are recommended.

Page ES-21, Impact 3.4-12, Mitigation Measure 3.4-12b in Table ES-2, Summary of Impacts and Mitigation Measures, is revised to read:

3.4-12: Construction of the Proposed Project could cause the loss or degradation of riparian forest.	**Mitigation Measure 3.4-12b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Tree mitigation will be based on the number or area of trees actually affected by project construction, as determined by a certified arborist. DWR will catalog affected trees before project construction, and will prepare a compensatory mitigation plan for the trees that includes monitoring and reporting. Compensatory mitigation may include the purchase of credits from an approved off-site bank or on-site tree plantings. If on-site restoration is required, DWR will submit the mitigation plan to the Central Valley Flood Protection Board for review with the encroachment permit application.

Page ES-24, Impact 3.5-1, Mitigation Measure 3.5-1c in Table ES-2, Summary of Impacts and Mitigation Measures, is revised to read:

3.5-1 (cont.)	**Mitigation Measure 3.5-1c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If a shipwreck and associated artifacts or other cultural resources on or in the tide and submerged lands of California are encountered during project development or operation, Mitigation Measure 3.5-1b and the following measures shall be implemented: • DWR shall initiate consultation with SLC staff within two business days of the discovery. • Per PRC Section 6313(c), any submerged cultural resource remaining in State waters for more than 50 years is presumed to be archaeologically or historically significant. • If the find is a maritime archaeological resource, the qualified archaeologist with whom DWR consults shall have expertise in maritime archaeology. • DWR shall consult with the SLC regarding assessment of the find and development of any treatment measures to minimize or mitigate potential impacts on the resource, pursuant to PRC Section 21083.2 and State CEQA Guidelines Section 15126.4. The final disposition of archaeological, historical, and paleontological resources recovered on State lands under the jurisdiction of SLC must be approved by the SLC. • DWR shall submit to the SLC any report prepared for the resource as part of the assessment of the find and implementation of treatment measures to minimize or mitigate potential impacts.

Section 3.4, Biological Resources

Page 3.4-10, Table 3.4-2 is revised to add:

Common Name Scientific Name	Status (Federal/ State)	Habitat Requirements	Identification/ Survey Period	Potential to Occur
Sacramento splittail Pogonichthys macrolepidotus	CSC	Requires flooded vegetation for spawning and juvenile foraging habitat	Spawns in spring and early summer.	Low. This species is found predominantly within the San Francisco Bay Estuary and in the lower Sacramento River downstream on the confluence with the Feather River. Occasional spawning activity may occur further upstream, but the evidence for self-sustaining populations outside the San Francisco Estuary and lower Sacramento River is weak (Moyle et al., 2004)

Common Name Scientific Name	Status (Federal/ State)	Habitat Requirements	Identification/ Survey Period	Potential to Occur
Hardhead Mylopharodon conocephalus	CSC	Low to mid-elevation streams in the Sacramento-San Joaquin drainage. Clear, deep pools with sand-gravel-boulder bottoms and slow water velocity.	Spawns in spring, mainly in April and May	Low. This species has a relatively narrow habitat niche, preferring warmer water temperatures but avoiding waters of depressed dissolved oxygen levels. They are generally found in clear deep waters with slow but present flow. Hardhead are often absent from areas that present suitable abiotic conditions, but contain alien fish species, further restricting their distribution.

Page 3.4-11, *Central Valley Spring-Run Chinook Salmon* heading, second paragraph, is revised to read:

> Spring-run Chinook salmon appear to emigrate at two different life stages: fry and yearlings. Fry largely move between February and June, while yearlings emigrate October to March, peaking in November. Juveniles have been documented to emerge as early as late November in Butte Creek, so fry could be actively emigrating in Butte Creek as early as late November (CDFG, 2004). Juveniles display considerable variation in stream residence and migratory behavior. Juvenile spring-run Chinook salmon may leave their natal streams as fry soon after emergence or may rear for several months to a year before migrating as smolts or yearlings (Yoshiyama et al., 1998).

Page 3.4-38, Mitigation Measure 3.4-3e is revised to read:

> Mitigation Measure 3.4-3e: If a GGS individual is observed within the project footprint, DWR will stop work and notify a designated biologist immediately. This biologist will be either a USFWS representative, a biologist holding a USFWS 10(a)(1)(A) permit, or if DWR has obtained a take permit under CESA, a designated biologist with knowledge and experience in the biology, natural history, capture, and handling of GGS. The snake will be allowed to leave on its own, and the designated biologist will remain in the area for the remainder of the workday to ensure that the snake is not harmed. Alternatively, with prior approval by CDFW and USFWS, the designated biologist may capture the snake and relocate it unharmed to suitable habitat at least 200 feet from the project area. DWR will notify CDFW and USFWS by telephone or email within 24 hours of a GGS observation during project activities. If the snake does not voluntarily leave the project area and cannot be captured and relocated unharmed, project activities will remain halted to

prevent harm to the snake, and CDFW and USFWS will be consulted to identify next steps. DWR will implement the measures recommended by CDFW and USFWS before resuming project work in the area.

Page 3.4-42, Mitigation Measures 3.4-4b and 3.4-4c are revised to read:

Mitigation Measure 3.4-4b: A designated biologist will conduct a preconstruction survey within 48 hours ~~7 days~~ before the establishment of staging areas and the start of construction and maintenance activities.

Mitigation Measure 3.4-4c: Should a western pond turtle be observed during the preconstruction survey and it is determined that relocation is necessary, a relocation plan will be developed by a designated biologist in consultation with CDFW. The biologist will identify the location using GPS coordinates. DWR will revisit these locations within 8 hours of ground disturbance. A designated biologist may relocate the turtle found within the construction footprint to suitable habitat away from the construction zone.

Page 3.4-45, Mitigation Measures 3.4-5d and 3.4-5e are revised to read:

Mitigation Measure 3.4-5d (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative)~~:~~ ~~If vegetation removal is to begin during the nesting season for Swainson's hawk (between March 1 and September 15), a~~ designated biologist will conduct a minimum of one protocol-level preconstruction survey. The survey(s) will occur during the recommended survey periods for the nesting season that coincides with the start of construction activities, in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee, 2000). Where legally permitted, the designated biologist will conduct surveys for nesting Swainson's hawk within 0.25 mile of the project area.

Mitigation Measure 3.4-5e ~~d~~ (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative): If active Swainson's hawk nests are found within 0.5 ~~0.25~~ mile of construction or maintenance activities, the findings will be reported to CDFW following the preconstruction survey. For purposes of this avoidance and minimization requirement, "construction activities" are defined to include the operation of heavy equipment during construction (use of cranes or draglines, new rock-crushing activities) or other project-related activities that could cause nest abandonment or forced fledging within 0.5 ~~0.25~~ mile of a nest site between March 1 and September 15. Should an active nest be present within 0.5 ~~0.25~~ mile of a construction area, DWR will consult with CDFW to establish appropriate avoidance measures; determine whether high-visibility construction fencing will be erected around the buffer zone; and implement a monitoring and reporting program that includes monitoring either

continuously or periodically, depending on the construction or maintenance activities and level of disturbance, before any construction activities occur within 0.5 ~~0.25~~ mile of the nest. Should the designated biologist determine that the construction activities are disturbing the nest, the biologist will halt construction activities until DWR consults with CDFW. If the biologist determines that construction activities cause or contribute to a bird being flushed from the nest, or observes other signs of disturbance of a nesting bird at a level that has potential to cause nest failure, the existing buffer distance will be reevaluated by the qualified biologist and in consultation with CDFW and revised or increased as necessary. The construction activities will not resume until CDFW determines that they will not result in abandonment of the nest site. Should the designated biologist determine that construction activities within the buffer zone have not disturbed the nest, DWR will report to CDFW summarizing the survey results within 30 days after the final monitoring event, and no further avoidance and minimization measures for nesting habitat are recommended.

Page 3.4-52, Impact 3.4-8, *Operations and Maintenance,* second paragraph under the heading is revised to read:

In the unlikely event that the Proposed Project does not perform as designed and fish remain stranded below Tisdale Weir, Mitigation Measure 3.4-8c has been identified as a contingency action to protect special-status fish. For an analysis of the implications of Proposed Project operations regarding fish passage conditions, see Impact 3.4-11. Additionally, DWR will consult with NMFS and CDFW to determine whether further protective measures will be required for the issuance of incidental take permits for listed fish species.

Page 3.4-55, Impact 3.4-10, *Operations and Maintenance,* is revised to read:

The installation of the new weir and fish passage facilities may increase local predation of native juvenile fishes in the immediate vicinity of the weir. Water diversion infrastructure has been known to increase the effectiveness of ambush predators (Sabal et al. 2016). These structures create unnatural locations where predators can lie and wait, striking naïve juvenile salmon that are potentially disoriented after swimming through these obstacles, as they pass by (Sabal et al. 2016).

Despite the potential for localized predation at the weir, the operation of the Proposed Project is expected to reduce predation risks for fish that can become stranded in the Tisdale Bypass below Tisdale Weir under current conditions. Improving the ability of upstream-migrating adult fish such as sturgeon and salmon to reach the mainstem Sacramento River is expected to reduce the loss of these fish to pisciviorous (fish-eating) predators such as birds, because under existing conditions, the fish commonly become stranded and concentrated in small isolated pools. Periodic maintenance activities within the project footprint are not expected to alter predation risks for native fish species.

Page 3.4-57, Impact 3.4-11, *Operations and Maintenance,* first sentence in the second paragraph under the heading is revised to read:

> Flow conditions in the Sacramento River downstream of Tisdale Weir are expected to be similar to existing conditions (i.e., to change by 2.2 ~~5~~ percent or less).

Page 3.4-59, Mitigation Measure 3.4-12b is revised to read:

> **Mitigation Measure 3.4-12b:** Tree mitigation will be based on the number or area of trees actually affected by project construction, as determined by a certified arborist. DWR will catalog affected trees before project construction, and will prepare a compensatory mitigation plan for the trees that includes monitoring and reporting. Compensatory mitigation may include the purchase of credits from an approved off-site bank or on-site tree plantings. If on-site restoration is required, DWR will submit the mitigation plan to the Central Valley Flood Protection Board for review with the encroachment permit application.

Section 3.5, Cultural Resources

Pages 3.5-20 and 3.5-21, Mitigation Measure 3.5-1c is revised to read:

> **Mitigation Measure 3.5-1c:** If a shipwreck and associated artifacts or other cultural resources on or in the tide and submerged lands of California are encountered during project development or operation, Mitigation Measure 3.5-1b and the following measures shall be implemented:
>
> - DWR shall initiate consultation with SLC staff within two business days of the discovery.
> - Per PRC Section 6313(c), any submerged cultural resource remaining in State waters for more than 50 years is presumed to be archaeologically or historically significant.
> - If the find is a maritime archaeological resource, the qualified archaeologist with whom DWR consults shall have expertise in maritime archaeology.
> - DWR shall consult with the SLC regarding assessment of the find and development of any treatment measures to minimize or mitigate potential impacts on the resource, pursuant to PRC Section 21083.2 and State CEQA Guidelines Section 15126.4. The final disposition of archaeological, historical, and paleontological resources recovered on State lands under the jurisdiction of SLC must be approved by the SLC.

- DWR shall submit to the SLC any report prepared for the resource as part of the assessment of the find and implementation of treatment measures to minimize or mitigate potential impacts.

Chapter 7, References

Page 7-3 is revised to read:

CDFG (California Department of Fish and Game). 1998. *A Status Review of the Spring-Run Chinook Salmon (Oncorhynchus tshawytscha) in the Sacramento River Drainage.* Report to the California Fish and Game Commission, Candidate Species Status Report 98-01. Sacramento, California. June 1998.

---. 2004. Butte Creek Big Chico Creeks Spring-Run Chinook Salmon, Oncorhynchus tshawytscha, Life History Investigation, 1998-2000. Ward, P. D., and T. R. McReynolds. Inland Fisheries Admin. Report No. 2004-2.

Page 7-4 is revised to add:

Moyle, P. B., R. D. Baxter, T. Sommer, T. C. Foin, and S. A. Matern. 2004. Biology and Population Dynamics of Sacramento Splittail *(Pogonichthys macrolepidotus)* in the San Francisco Estuary: A Review. San Francisco Estuary and Watershed Science 2(2).

Page 7-5 is revised to add:

Sabal, M., S. Hayes, J. Merz, and J. Setka. 2016. Habitat Alterations and a Nonnative Predator, the Striped Bass, Increase Native Chinook Salmon Mortality in the Central Valley, California. North American Journal of Fisheries Management 36(2):309?320, DOI: 10.1080/02755947.2015.1121938.

Changes to Appendices

The DEIR Appendix F footnote on page 5 was referencing the *Basis of Design* report was removed, and an additional reference to the *Basis of Design* report was removed from page 22.

CHAPTER 3
Comments and Responses

3.1 Introduction

This chapter contains the comment letters that were received on the DEIR. Following each comment letter is a response by DWR intended to supplement, clarify, or amend information provided in the DEIR or to refer the reader to the appropriate place in the document where the requested information can be found. Comments not directly related to environmental issues may be discussed or noted for the record. Where text changes in the DEIR are warranted based upon comments on the DEIR, those changes are included in Chapter 2, *Revisions to the Draft EIR.*

Occasionally, a response to a comment provides a cross-reference to another response to comment. This occurs when the same, or very similar, comment was made or question asked, and an appropriate response was included elsewhere.

3.2 Master Comment Responses

This section presents responses to environmental issues raised in multiple comments. In addition to responding individually, DWR has developed master comment responses to address such comments comprehensively. The master comment response number is also identified in the individual response to comment so that reviewers can readily locate all relevant information pertaining to the following issues of concern.

Master Comment Response 1: Tisdale Bypass Hinge Point and Sediment/Debris Accumulation and Movement in the Tisdale and Sutter Bypasses from Operation of the Proposed Project

Introduction

DEIR comments were received on the operations of the Proposed Project related to sedimentation in the Tisdale and Sutter Bypasses, including comments on the Tisdale Bypass hinge point and potential impacts to agricultural and recreational resources. This master comment response first describes the existing Tisdale Bypass hinge point and explains why operation of the Proposed Project is not anticipated to change the hinge point. Next, existing Tisdale Bypass sediment removal maintenance activities are described, and the changes in sediment/debris accumulation and movement in the Tisdale and Sutter Bypasses resulting from operation the Proposed Project are described. The predicted approximate 8-9 percent total volume increase in sediment over approximately 10 years, which includes water years with higher and lower flood flows, would be

well within the historical range of sediment removed as part of existing DWR operations and maintenance (O&M) activities.

Potential impacts to agricultural and recreational resources as a result of Project operations are summarized in Master Comment Response 2, Proposed Project Sutter Bypass Flow and Agricultural Resources—Application of the TUFLOW Model and CEQA Impact Analysis, and Master Comment Response 3, Proposed Project Sutter Bypass Flow and Recreation—Application of the TUFLOW Model and CEQA Impact Analysis, respectively.

Tisdale Bypass Hinge Point

As described in DEIR Chapter 2, *Project Description,* on page 2-22, the Tisdale Bypass hinge point is a topographic feature (i.e., an area of subtly higher ground) created by sediment deposition driven by weir hydraulics, wherein a "hydraulic shadow" or area of scour forms directly downstream of the Tisdale Weir and a sill elevation, or "hinge point," builds up and persists downstream of that scoured area, likely because of both natural sediment deposition in the bypass and the influence of the Sutter Bypass backwater from downstream. The hinge point is currently at an elevation of approximately 37 feet—just a few feet higher than surrounding ground elevations—and is anticipated to remain at a similar elevation with the Proposed Project.

Although DWR already annually monitors the weir and bypass in this area to assess the need for maintenance, monitoring and maintenance of the hinge point is not essential to limiting the Proposed Project's potential impacts or making potential impacts less severe. When the river's water surface recedes to an elevation range near that of the hinge point elevation, the flow moving through the notch (and thus down the Tisdale Bypass) would be less than approximately 200 cubic feet per second (cfs) (see Figure 6 of Attachment A, *Tisdale Weir 1D HEC-RAS Modeling,* of DEIR Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*). Thus, even were the hinge point to be eroded out (which is not anticipated, given that this feature is formed by depositional forces, not erosional forces), the flows down the bypass would be very minimal and irrelevant. For context, the predicted peak flow through the notch would be approximately 3,200 cfs (see Figure 6 of Attachment A, *Tisdale Weir 1D HEC-RAS Modeling*, of DEIR Appendix C, *TUFLOW Model Results and CEQA Impact Analysis).* In addition, downstream water levels (stage) and sedimentation in the Tisdale and Sutter Bypasses do not rely on existence of the hinge point. Page 10 of Appendix H, *Sediment Budget and Analysis Technical Memorandum,* of the DEIR describes the effects on weir hydraulics, with the conclusion that the general patterns of sediment deposition for the assessed time period between 2007 and 2017 with the Proposed Project would be the same as with existing conditions. Therefore, the hinge point is not anticipated to change as a result of the Proposed Project, and the hinge point would not influence downstream water stage or sedimentation and is inconsequential with respect to the potential Project impacts, because it is similar to existing conditions.

Proposed Project Operations and Sediment/Debris Movement in the Tisdale and Sutter Bypasses

Tisdale Bypass Maintenance

As stated in DEIR Chapter 1, Introduction, DWR operates and maintains the Tisdale Bypass in accordance with California Water Code Section 8361, and the Tisdale Bypass maintenance objectives are governed by the Operations and Maintenance Manuals developed by the U.S. Army Corps of Engineers (USACE) as part of the Sacramento River Flood Control Project. Maintenance activities include grading sediment, removing sediment and vegetation, repairing and guarding against erosion, making appropriate repairs to flood control facilities, and performing necessary maintenance. DWR will continue to conduct regular sediment removal activities (and separate projects, as deemed necessary) associated with the Tisdale Bypass based on monitoring and assessment, with or without the Proposed Project.

DWR last conducted sediment removal projects in the Tisdale Bypass in 2007 and in 2020; environmental effects of the sediment removal projects were assessed under the Tisdale Bypass Channel Rehabilitation Project 2007 Initial Study/Mitigated Negative Declaration (IS/MND) (State Clearinghouse Number 2007022044) and the Tisdale Bypass Sediment Removal 2020 Project IS/MND (State Clearinghouse Number 2020019015), respectively. In addition, DWR conducts regular operation and maintenance of the Tisdale Bypass under the 2018 Environmental Permitting for Operation and Maintenance (EPOM) Environmental Impact Report (EIR) (State Clearinghouse Number 2015052035).

DEIR commenters noted the existing challenges of farming and maintaining hunting blinds within the Sutter Bypass, which is an engineered flood bypass system designed to periodically convey large amounts of water and sediment. DWR acknowledges that land use activities within a floodway are inherently more constrained than for otherwise similar activities on the land side of a levee.

Debris and Sediment Accumulation and Movement in the Tisdale Bypass from Operation of Proposed Project

As described on pages 3.7-21 through 3.7-22 of the DEIR in Section 3.7, *Hydrology,* similar to other flood control facilities, sediment and debris accumulate on the Tisdale Weir under existing conditions, and these materials may accumulate in the connection channel (i.e., the channel from the Sacramento River to the proposed notch in the Tisdale Weir) during operation of the Proposed Project. However, such accumulation is expected to be comparatively limited, as localized scouring velocities in the connection channel and notch would generally be relatively high, particularly on the receding limb of the flood hydrograph. The proposed erosion repair and scour protection measures (e.g., use of riprap and concrete), the regular removal of debris, and the inspection and repair of riprap at the weir and within the Tisdale Bypass would reduce the accumulation of debris in the Tisdale Bypass.

As described on page 3.7-25 of the DEIR, after construction of the Proposed Project, soil disturbed during construction could be mobilized in the water column. In addition, implementing

the Proposed Project would increase the amount of suspended sediment delivered and deposited in the Tisdale Bypass by approximately 8?9 percent over approximately 10 years. As described in Appendix H, *Sediment Budget Analysis Technical Memorandum,* of the DEIR, under the Proposed Project conditions it is estimated that 194,800 to 370,200 cubic yards of sediment would have deposited in the Tisdale Bypass for the 2007 to 2017 time frame, compared with 181,200 to 344,400 cubic yards of sediment under existing conditions. This represents an approximate 8?9 percent total volume change over 10 years, which includes water years with higher and lower flood flows. Predicted changes in sediment flux for each year between 2007 and 2017 are represented in Tables 2 and 3 in Appendix H, *Sediment Budget Analysis Technical Memorandum,* of the DEIR. Also described on page 3.7-25 of the DEIR, operation of the

Proposed Project would increase the volume of sediment deposited in the Tisdale Bypass, which could lead to a substantial cumulative alteration of drainage patterns and reduction of flood conveyance capacity that could increase flood risk; however, the increase in sediment deposition is expected to be well within the historical range of sediment removed as part of existing DWR operations and maintenance activities.

The additional volume of sediment that may be delivered to and deposited in the Tisdale Bypass (and ultimately the Sutter Bypass) as a result of the Proposed Project is, in any given year or even considered cumulatively, a very small volume of sediment compared to the downstream area of delivery. For example, if all the additional sediment predicted to be delivered over a 10-year period as a result of the Proposed Project (approximately 136,000 cubic yards; see Tables 2 and 3 in Appendix H, *Sediment Budget Analysis Technical Memorandum, of* the DEIR) were to be spread over approximately 1,000 acres (which would represent only a small fraction of the total Sutter Bypass area), it would equate to a depth of less than 0.08 feet. Even this relatively small depth value should be considered a very conservative estimate, as it is unrealistic to assume all the sediment delivered would be deposited (versus a large portion further transported downstream) and further, it is unrealistic to assume that it would all be deposited over such a small (1,000-acre) area. For comparison, the combined floodplain area of the Tisdale Bypass and the Sutter Bypass (that portion running downstream from the Tisdale Bypass) is approximately 12,800 acres.

As discussed under Impact 3.7-2 of the DEIR, DWR would perform maintenance activities that would generally remove sediment from the Tisdale Bypass within the project footprint for the Proposed Project (DEIR Figure 2-2) to maintain fish passage conditions on an up to annual basis, depending on the type of flood season (e.g., very dry or very wet), the rate at which sediment and debris accumulate at the site, and the effects of the magnitude of sediment and debris accumulation on conveyance capacity, energy dissipation, and fish passage conditions.

Appendix B, *Large Wood Debris at Tisdale Weir Technical Memorandum,* of Appendix J, *Engineering Feasibility Report,* of the DEIR, evaluated large wood debris (LWD) accumulation in the area along Tisdale Weir under existing conditions and with the Proposed Project. As stated on page 4 of Appendix B, *Large Wood Debris at Tisdale Weir Technical Memorandum,* of

Appendix J, *Engineering Feasibility Report*, of the DEIR, the risk of LWD accumulation as a result of the Proposed Project is relatively low. Sediment deposition and debris in the Tisdale Bypass under Project Conditions is also discussed Impact 3.7-3 in DEIR Section 3.7, *Hydrology*.

In summary, the amount of sediment and debris that would flow to the Sutter Bypass from the Tisdale Bypass as a result of the Proposed Project would be within the range of existing conditions and would not have a significant impact on water quality or agricultural and recreational resources in the Sutter Bypass. No additional debris or sediment removal or monitoring is proposed for the Sutter Bypass.

Master Comment Response 2: Proposed Project Sutter Bypass Flow and Agricultural Resources---Application of the TUFLOW Model and CEQA Impact Analysis

Several comments suggested that the DEIR did not sufficiently evaluate impacts on agricultural operations in the Sutter Bypass from increased flooding, which could lead to reduced agricultural production or fallowing. Some comments questioned the assumptions used in the impact assessment methodology for agricultural resources. Comments also requested additional parcel-specific analysis regarding the flow, frequency, extent, and duration of inundation during operation of the Proposed Project when the notch is open.

In summary:

- Under existing conditions, fallowing of agricultural fields occurs in the Sutter Bypass.
- The DEIR identified that farmland in the Sutter Bypass could be affected by operation of the Proposed Project by adding water (flowing through the notch) and subsequently potentially causing the extent and/or duration of inundation to increase in some areas (DEIR Impact 3.2-1, pages 3.2-13 through 3.2-15).
- As a result of the Proposed Project, only 18 out of 115 fields (approximately 1,026 out of 10,045 acres) in the Sutter Bypass would experience a change in fallowing.
  - For 15 of the 18 fields, there would be one additional year of fallowing in the 22-year modeled time frame.
  - For two of these 15 fields, the additional year of fallowing would be consecutive, potentially taking one field (Field 70) from one to two maximum consecutive years of fallowing and the other field (Field 17) from two to three maximum consecutive years of fallowing.
  - For three of the 18 fields (Fields 28, 34 and 82), there would be two additional years of fallowing in the 22-year modeled time frame.
- It is not reasonably foreseeable that these predicted changes in fallowing would result in conversion of farmland to non-agricultural use for any of these fields. Therefore, it was determined that impacts to agricultural resources are not significant in the DEIR.

The following provides clarifying information in response to comments regarding the model developed and impact assessment conducted for the agricultural resources section presented in the DEIR (Section 3.2).

Modeling to Assess Impacts on Agricultural Resources

Attachment A to this FEIR illustrates Tisdale Weir flow hydrographs for existing and Proposed Project conditions. Attachments B1 and B2 of the FEIR provide clarifying information on the number of wet days and the change in the last day wet during the field preparation and sowing season, for every year and every field. This information does not change the results found in Section 3.8.4, *Impacts and Mitigation Measures,* of the DEIR, as described below.

TUFLOW Model Development

A coupled one-dimensional/two-dimensional hydrodynamic model of the Tisdale and Sutter Bypasses using the HPC commercial software package TUFLOW was developed to analyze hydrology and hydraulics under existing and Project conditions and to quantify any changes in inundation downstream in the Sutter Bypass that could result from the Proposed Project (as described on page 3 in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, and as described on page 3.2-8 in Section 3.2, *Agricultural Resources,* of the DEIR).

Based on a number of metrics calculated and output by the model for both the existing and Project conditions (e.g., inundation extent, water depth), the results were used to determine how often a given field would be fallowed under these conditions and the change between the two conditions was calculated. However, some context and information concerning actual farming and fallowing practices within the Sutter Bypass was also required to assess the significance of the change calculated by the model.

TUFLOW Model 22-year Simulation Timeframe (1997-2018)

As described on page 5 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, the TUFLOW model was run for a simulation period of Water Years (WYs) 1997 to 2018 (22 years), which uses the optimum period of available observed data and reflects a wide range of water year types as categorized by WY typology based on the Sacramento Valley Water Year Index (e.g., Wet, Above Normal, Below Normal, Dry, and Critical) without the Proposed Project. A water year spans from October 1 of the prior calendar year through September 30 of the given water year. However, to account for all seasons of interest (e.g., agriculture and waterfowl hunting) and eliminate unnecessary computational time, a truncated WY period spanning from September 28 through June 30 was used for the model simulations. This approach and time frame is representative of existing conditions in the Sutter Bypass, as it reflects a wide range of WY types including Critical, Dry, Below Normal, Above Normal and Wet within the 22-year time frame.

U.S. Department of Agriculture CropScape 12-year Time Frame (2007?2018)

As described on page 21 Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR, the U.S. Department of Agriculture (USDA), National Agricultural Statistics Service has

mapped crop types and land use in the Project area dating back to 2007, including fallow/idle cropland, and has published these data as part of the national CropScape-Cropland Data Layer (CropScape Data). This data layer was used in the DEIR analyses in conjunction with the TUFLOW model results as a way to compare observed fallowing data with predicted, potential Project-induced fallowing. As described on page 27 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, CropScape fallowing information within the Sutter Bypass was only available starting in 2007; therefore, a 12-year period (2007?2018) of observed data was used to characterize existing fallowing practices within the Sutter Bypass. That annual, observed fallowing information was used to inform the CEQA analyses related to model-predicted potential impacts to agricultural resources from the Proposed Project. Specifically, the CropScape data are actual crop fallowing data for existing conditions that illustrate the frequency and extent of fallowing in the bypass that has not resulted in land use conversion. The DEIR used these data to understand the existing conditions related to annual fallowing and to provide some context for assessing the significance of any predicted changes. Note that the 12 years of observed USDA CropScape fallowing data are completely separate data from the hydrologic/hydraulic outputs from the TUFLOW model, which covers a 22-year period.

The predicted change in fallowed years predicted by the TUFLOW model (e.g., two additional years, one additional consecutive year), for every field, was considered in the context of the USDA CropScape data on fallowing (the analysis did not use or consider an average of fallowing events). For example, in assessing the significance of the predicted change, this general question was considered: Would the *change* in fallowed years predicted by the model, when added to the observed number of fallow years reported by CropScape, result in a total that would be outside the range of actual fallowing observed by CropScape in the Sutter Bypass? And in no instance would this estimate of fallowed years (e.g., with the Proposed Project) fall outside the range of values shown on Figures 7 and 8, page 23, Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR. As described on page 22, Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR, any given field or fields were potentially a candidate for assumed conversion if the Proposed Project caused an increase in the frequency of fallowing (resulting from flow frequency, duration, timing and water depths) beyond the range currently observed (i.e., existing conditions). Attachment B, *USDA CropScape Data Analysis,* of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR, provides details on how historical annual fallowing data were analyzed to define the range of fallowing currently observed.

For each year in the agriculture season (March 1–June 30) within the 22-year analysis period (WY 1997–2018), the TUFLOW model was used to determine whether that unit area was “wet” (see definitions below), and identify the last day wet.

As described on pages 15 through 16 and page 29 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, the following definitions were used relating to flow frequency, duration, timing, and magnitude (water depths and extents) in the Sutter Bypass. A

justification for the use of these definitions and/or dates is described in Section 3.1, *Methods,* of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR.

- **Wet Day**—a day when the given field or parcel is assumed to be inundated at a depth of at least 0.1 feet over at least 30 percent of its area (Reclamation and DWR 2019), and is effectively considered inundated on that day for purposes of the analysis presented in the DEIR. Thus, as a metric, a wet day comprises inundation extent, water depth, and duration.

- **Number of Wet Day**—the number of days in a given season that the geographic unit (parcel, field, or continuous ownership) is more than 30 percent inundated (depth at least 0.1 feet) at the end of the given day(s), as computed by the TUFLOW model. Thus, as a metric, the number of wet days comprises inundation extent, water depth, frequency, and duration.

- **Last Day Wet**—the date the ground is considered dry enough for tractors to chisel fields. This is assumed to occur when 70 percent or more of the field is dry (less than 0.1 feet depth) (Reclamation and DWR 2019), as computed by the TUFLOW model at the end of a given day. Thus, as a metric, the last day wet comprises inundation extent, water depth, and timing (duration is not applicable because the definition relates to only the end of the inundation period).

- **Drying and Preparation Period**—the sum of additional days to reflect (1) the necessary assumed soil drying time before field preparation begins, and (2) an assumed field preparation period. The time assumed for the drying and preparation period in the DEIR is 34 days based on the CropScape data and in comparison to previous work by others (Reclamation and DWR, 2019).

- **Planting Date**—the Last Day Wet plus the Drying and Preparation Period. The later the planting date, the greater potential for decreases in agricultural yield. For purposes of analysis in the DEIR, June 1 was assumed to be the end date of the standard planting window for crops in the Sutter Bypass based on the CropScape Data and in comparison to previous work by others (Reclamation and DWR, 2019).

- **Agricultural Field Preparation and Sowing Period**—March 1 through June 30 (based on Reclamation and DWR 2019); also referred to as the agricultural season.

- **Frequency of Inundation**—As described above, the model included a 22-consecutive-year simulation time frame (1997–2018) and associated existing- and Project-condition hydrology inputs, which reflect the frequency of inundation that has and would occur within the Sutter Bypass related to the various metrics described herein.

Existing Conditions—Frequency of Fallowing

Fallowing of lands within the Sutter Bypass occurs under existing conditions, as discussed on pages 21 through 26 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR.

As described below and on page 27 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR, 12 years of observed data on fallowing published by the USDA CropScape program for the Sutter Bypass were used to characterize the existing extent of fallowing for each of the 115 fields (the USDA CropScape data spanned 2007–2018).

In any given year between 2007 (when the USDA CropScape information was first available) and 2018, the percent of observed fallowed land in the Sutter Bypass generally ranged from 5 percent (in WY 2007) to 70 percent (in WY 2017). Most agricultural fields in the Sutter Bypass have experienced one to four years of fallowing over approximately only the last decade. The existing annual fallowing discussed and displayed in Attachment B of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, represents a decision by each grower in each year, and is based on a variety of factors including flooding delaying field preparations and planting, irrigation water supply availability, crop prices, crop insurance, and other factors. However, as of 2018, despite the range of annual fallowing (or consecutive years of annual fallowing) in that 12-year recorded period, those parcels remained in production and were not converted to a non-agricultural use. Thus, this yields a proxy threshold indicating what set of conditions (from flooding or any other factor) has not resulted in fallowing. Further, as shown in Figure 8, Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, a little over one-third of these fields have experienced two or more consecutive years of fallowing.

Sutter Bypass Modeling Results

As presented in the DEIR, as result of the Proposed Project, only 18 out of 115 fields (approximately 1,026 out of 10,045 acres) in the Sutter Bypass would experience a change in fallowing. For 15 of the 18 fields, there would be one additional year of fallowing in the 22-year modeled time frame. For two of these 15 fields, the additional year of fallowing would be consecutive, potentially taking one field (Field 70) from one to two maximum consecutive years of fallowing and the other field (Field 17) from two to three maximum consecutive years of fallowing. For three of the 18 fields (Fields 28, 34, and 82), there would be two additional years of fallowing in the 22-year modeled time frame. See Attachment B of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis;* the predicted changes in fallow years and maximum consecutive fallow years are shown in Figure 9 and Figure 10 of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis.*

Among all 115 fields assessed in the Sutter Bypass, in many years (almost half), the predicted change in wet days (a wet day being a measure of flooding) during the agricultural season is not relevant, as the given field either remains dry under both conditions (Project and Existing) or is already fallowed under existing conditions. For the remaining years, the majority of the predicted changes are less than or equal to three additional wet days during the assumed 121-day-long agricultural preparation and planting period. Collectively, over 90 percent of the predicted change (considering each field and every year) is either not noticeable or less than or equal to three additional wet days during the assumed 121-day-long agricultural preparation and planting period. Thus, the vast majority of the predicted change in the number of wet days was relatively small, and the analysis of agricultural impacts further focused specifically on whether or not the predicted change in wet days for a given field would delay planting such that the field would likely be fallowed (i.e., if planting would occur after June 1).

As shown on Table 1, Figure 9, Figure 10, Figure 11, and Figure 12 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, results are presented for all parcels and

fields in the Sutter Bypass. In Figures 9 and 10 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, those fields for which an actual (year by year, not aggregated) agricultural resources impact was identified are called out in the rightmost panel.

Sutter Bypass Agricultural Resources Impact Analysis

It is not reasonably foreseeable that these predicted changes in fallowing result in conversion of farmland to non-agricultural use for any of these fields. Therefore, it was determined that impacts to agricultural resources were not significant in the DEIR.

As described in Section 3.2.4, *Impacts and Mitigation Measures,* of the DEIR, an impact on agricultural resources is considered significant if the proposed project would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

Regarding the evaluation of Farmland conversion to non-agricultural use, it is important to note existing conditions in the Sutter Bypass. The Sutter Bypass is an engineered flood bypass system designed to periodically convey large amounts of water and sediment, and annual fallowing of agricultural fields under existing conditions, even including consecutive years of fallowing, reflects temporary cropland idling, not permanent land conversion (stated in DEIR Section 3.2.4, pages 3.2-8 through 3.2-11, and Section 3.1.4, Fallowing and Conversion, in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR).

As stated in DEIR Appendix C Section 3.1.4, *Fallowing and Conversion,* fallowing of agricultural fields within the Sutter Bypass may occur for a variety of reasons unrelated to ground conditions being wet too late in the season for planting to occur (e.g., a grower is resting the ground; market conditions drive a grower to decide to fallow a field; a grower may not have sufficient irrigation water in a drier water year and may choose to fallow a field [e.g., water rights curtailed]).

The relevant CEQA significance thresholds for the Sutter Bypass agricultural resources impact analysis included whether fields/parcels would be converted from Farmland to non-agricultural use or conflict with existing zoning or agricultural use or Williamson Act contracts. Fallowing of fields/parcels occurs under existing conditions; therefore, fallowing of a field/parcel does not automatically mean that the field would be converted to non-agricultural use or conflict with existing zoning or agricultural use or Williamson Act contracts. It is not reasonably foreseeable that 18 out of 115 fields (approximately 1,026 out of 10,045 acres) in the Sutter Bypass potentially experiencing a change in fallowing would result in conversion of Farmland to non-

agricultural use or result in a conflict with existing zoning or agricultural use or Williamson Act contracts. Therefore, impacts to agricultural resources were not determined significant.

No revisions to the Draft EIR are required; therefore, recirculation is not required pursuant to State CEQA Guidelines Section 15088.5.

Master Comment Response 3: Proposed Project Sutter Bypass Flow and Recreation—Application of the TUFLOW Model and CEQA Impact Analysis

Several comments questioned whether increases in water levels in the Sutter Bypass as a result of Project operations could alter habitat suitability for waterfowl and adversely affect waterfowl hunting. Some comments also related to the assumptions used in the impact assessment methodology for recreational resources.

In summary:

- For the identified private waterfowl hunting clubs in the Sutter Bypass on Williamson Act parcels, on average, the Proposed Project would reduce waterfowl hunting opportunities over a 138-day season by up to one day per year.
- For all other private parcels in the Sutter Bypass, on average, the Proposed Project would reduce waterfowl hunting opportunities over a 138-day season by up to three days per year.
- Beyond this, there would be no effective change in water levels as a result of the Proposed Project during time periods when waterfowl hunting typically occurs.
- The minor reduction in waterfowl hunting opportunities from the Proposed Project would not result in a permanent displacement of existing recreational facilities or a substantial permanent decrease in access to existing recreational facilities or opportunities. Therefore, it was determined that impacts to recreational resources are not significant in the DEIR.

The following provides clarifying information in response to comments regarding the model developed and impact assessment conducted for the recreation section presented in the DEIR (Section 3.8).

Sutter Bypass Modeling and Results

As stated in DEIR Section 3.8.4, *Impacts and Mitigation Measures,* and in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, impacts to the waterfowl hunting season (e.g., causing a change in available waterfowl hunting habitat or preclusion of access to hunting) were assessed using a comparative assessment of additional wet days resulting from increased flows from the Proposed Project.

Detailed model results of water depth and inundated area, for each parcel in the Sutter Bypass, are presented in Attachments C and D of this FEIR, which include, for each of the consecutive 22 water years simulated, the modeled, existing average depth and inundation area for both wet and dry days; a dry day is a day that is not classified as a wet day. A wet day assumes that the given

parcel is inundated at a depth of at least 0.1 feet over at least 30 percent of its area and is effectively considered inundated on that day for purposes of the analysis presented in the DEIR. Thus, as a metric, a wet day comprises inundation extent, water depth, and duration. Simply stated, a wet day, either under existing conditions or caused by the Proposed Project, represents a flooded condition and waterfowl hunting (or at least active water management for waterfowl hunting) would be precluded.

Table 3-1 summarizes this information for all 22 modeled water years and provides the same summary statistics by water year type. Figures 1 through 12 in Attachment E of this FEIR summarize existing depth and (using X's on the figures) inundated area data for wet and dry days for all parcels in the Sutter Bypass (Figures 1 through 6 present information for wet days, and Figures 7 through 12 present information for dry days). Parcel identification numbers in all attachments correlate to the parcels mapped in Attachment C of this FEIR and the parcels named in Attachments C and D of the FEIR.

As explained more below, dry days (as opposed to wet days) are characterized by non-flooded conditions that (depending on the season) correlate with land being available for management and uses such as agriculture or recreation (i.e., managed habitat for waterfowl hunting). All of the inundation information described in the DEIR (e.g., wet days) is from the river and channel system (in other words, modes of flooding that the Proposed Project has the ability to influence). Inundation and water depths on parcels reported and discussed in the DEIR should not be confused with any property owner pumping or diverting water onto their parcel for the purpose of creating habitat or other reasons. The implicit assumption is that "dry-day conditions" are necessary to allow for such management; as noted below, a land manager cannot manage water levels for hunting (where water depths for waterfowl habitat might target a depth of 1.5 feet) on a wet day when (on average) the depths are over 4 feet deep.

TABLE 3-1: AVERAGE INUNDATED AREA AND AVERAGE INUNDATED DEPTH BY PARCEL FOR WATERFOWL SEASON FOR

Years	Type	Existing Conditions— Wet Days Average Inundated Depth (feet)	Existing Conditions— Wet Days Average Inundated Area (% of Total Parcel)	Existing Conditions— Wet Days Average Inundated Depth (feet)	Existing Conditions— Wet Days Average Inundated Area (% of Total Parcel)
For All Modeled Years	Average	4.44	78.0	0.99	1.5
	Minimum	1.65	38.0	0.00	0.0
	Maximum	19.36	100.0	15.92	27.3
By Water Year Type	Wet	5.56	83.2	1.17	1.8
	Above Normal	3.52	74.8	1.10	1.6
	Below Normal	2.99	70.8	0.96	1.3
	Dry	3.21	71.3	0.83	1.3
	Critical	2.8	67.9	0.89	1.4

Under existing conditions, during wet days (those where the parcel is greater than 30 percent inundated by a depth of 0.1 foot or more), the average inundated depth for all parcels in the Sutter Bypass across all water years is 4.4 feet, and the range in average depth amongst parcels is 1.7 feet to 19.4 feet (Table 3-1). Further, the average inundated area during wet days for all parcels and all water years in the Sutter Bypass is 78 percent, and the range in average inundated area amongst parcels is 38 percent to 100 percent (Table 3-1). In other words, during a simulated wet day under existing conditions, the typical Sutter Bypass parcel is inundated to an average depth of more than 4 feet over roughly three-quarters of the parcel area. For example, a wet day would be one in which, due to issues with or safety concerns over flooding, property access, and/or facility access (e.g., roads to the site or duck blinds), hunting is generally understood to be precluded. Were "boat-in" hunting (hunting accessed by boat from a location outside the bypass) assumed to occur in the bypass, the depths during these times are on average significantly greater (multiple times deeper) than the approximately 1.5 feet depth targeted for optimal managed hunting conditions. Thus, dry days during the waterfowl season provide opportunity to manage the land for hunting; wet days represent relatively deep, flooded conditions, making habitat water on-site essentially impossible to control and already outside of the typically desired managed "shooting depth." Changes to wet-day depths are described below.

Further, the variation in bypass-wide, existing average water depth and inundated area, by water year type, is also included in Table 3-1, and the variation in existing average depth for individual parcels is reported in Attachment C of this FEIR, *Wet Days Depth Area and Change*, and Attachment D of this FEIR, *Dry Days Depth and Area.* This information is presented on Figures 1 through 12 in Attachment E of this FEIR. In all cases, even in below normal, dry, and critical water years, the average inundated depth for the majority of parcels in the Sutter Bypass during wet days is greater than 1.5 feet.

To summarize the depth changes: During wet days, the average change in depth for all parcels in the Sutter Bypass across all water years is 0.0 feet, and the range in the change in depth amongst parcels is +0.20 feet to -0.76 feet (see Table 3-1). In other words, the Proposed Project has essentially no effect on water depth during any "boat-in" hunting on wet days. Further, during dry days, the average change in depth for all field/parcels and all water years in the Sutter Bypass is similarly 0.0 feet, and the range in the average change in depth amongst parcels is +0.48 feet to -0.39 feet (see Table 3-1). However, dry days are still days in which the given parcel is dry (not inundated), and the modeled changes in depth only apply to very small portions of the given parcels that happen to intersect already relatively deep areas (i.e., under existing conditions), such as the East or West Borrow Canals, or even the Feather River or Sacramento Slough. Depths in these relatively deep and perennially wet areas are already deep (beyond 1.5 feet) and they are not relevant to recreational hunting on parcels in the Sutter Bypass. Thus, the changes described at the beginning of this paragraph have no relevance to recreational hunting.

Figures 13 through 24 in Attachment E of this FEIR present the average changes in water depth, by water year type, for each parcel in the Sutter Bypass and, as shown, the predicted changes in water depth are very minor. As evident in Figures 13 through 24, the predicted increases in depth for wet days and dry days that are greater than approximately 0.5 feet are for parcels that belong to the Sacramento/San Joaquin Drainage District or the California Department of Fish and Wildlife (CDFW). In addition, Attachment F of this FEIR provides the change in the number of wet days for the waterfowl season for all water years and parcels in the Sutter Bypass.

In conclusion, for the private waterfowl hunting clubs in the Sutter Bypass on Williamson Act parcels, the predicted increase in the number of wet days, on average, is at most one day per year (i.e., the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for one additional day per year during a 138-day duck hunting season, September 28 through February 12 [CDFW, 2020]). For all other private parcels within the Sutter Bypass, the predicted increase in the number of wet days during waterfowl season, on average, is at most three days per year (i.e., the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for up to three additional days per year during a 138-day duck hunting season) (see Table 3-1 and Figure 12 in Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* of the DEIR). Beyond this, there would be no effective change in water levels during time periods when duck hunting typically occurs.

Sutter Bypass Recreation Impact Analysis

The minor reduction in waterfowl hunting opportunities from the Proposed Project would not result in a permanent displacement of existing recreational facilities or a substantial permanent decrease in access to existing recreational facilities or opportunities.

As described in Section 3.2.4, *Impacts and Mitigation Measures,* of the DEIR, an impact on recreation is considered significant if the proposed project would:

- Increase in use of recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;

- Require construction or expansion of recreational facilities which might have an adverse physical effect on environment; or

- Permanent displacement of existing recreational facilities or a substantial permanent decrease in access to existing recreational facilities or opportunities.

As concluded in Impact 3.8-2, given the seasonal and year-to-year variation in inundation within the Sutter Bypass under existing conditions this small, predicted change as a result of the Proposed Project would not result in a substantial loss of recreational opportunities with regard to waterfowl hunting or private hunting clubs.

The Proposed Project would not significantly affect the average inundated parcel depth for wet days (even though waterfowl hunting is highly unlikely to occur on a simulated wet day). Likewise, the Proposed Project would not significantly affect the average inundated parcel depth for dry days. The presentation herein of modeled change in the water depth, extent, and duration of inundation due to the Proposed Project, and conversion of dry day(s) under existing conditions to wet day(s) under Project conditions, illustrates the same result as presented in Section 3.8.4, Impacts and Mitigation Measures, and in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR.

Construction or expansion of recreational facilities which might have an adverse physical effect on the environment, or permanent displacement of existing recreational facilities or a substantial permanent decrease in access to existing recreational facilities or opportunities, are the relevant CEQA significance thresholds for the Sutter Bypass recreation impact analysis. Impacts to the hunting season (e.g., a cause in a change in available waterfowl habitat or preclusion of access to hunting) occur under existing conditions. The minor change in conversion of dry day(s) to wet day(s) from the Proposed Project would not result in a permanent displacement of existing recreational facilities or a substantial permanent decrease in access to existing recreational facilities or opportunities.

The information in this Master Comment Response is to amplify information already presented in the DEIR and does not change the results found in Section 3.8.4, *Impacts and Mitigation Measures,* of the DEIR. Therefore, recirculation is not needed pursuant to State CEQA Guidelines Section 15088.5.

3.3 Responses to Draft EIR Comments

Comment Letter F1

From: DWR Tisdale Weir RehabProject
To: Earley, James
Bcc: Schuette, Jeff@DWR
Subject: RE: Tisdale CEQA Documents and supplemental information
Date: Tuesday, January 26, 2021 9:07:00 PM

Hello,

Thank you for your inquiry regarding additional project details. Given that we are currently in the CEQA Public comment period for the Project Draft EIR, we will not be releasing additional project information at this time.

Thank you,
Tisdale Weir Rehab Team
DWR- Flood Maintenance Office

From: Earley, James <james_earley@fws.gov>
Sent: Monday, January 25, 2021 3:30 PM
To: DWR Tisdale Weir RehabProject TisdaleWeirRehabProject@water.ca.gov
Subject: Tisdale CEQA Documents and supplemental information

Good Day Tisdale Weir Rehab Team
In the Tisdale DWR DEIR products
On pages 4-5 of Appendix F Fish Passage Analysis Technical Memorandum
There is the following sentence with a footnote 2.
Previous analyses suggest that 33 to 34 feet is the optimal invert elevation with respect to performance of the fish passage facility.2
Footnote 2 See Basis of Design Report for more details.
I cannot locate the BOD for this project in the available documents. It isn't part of the Appendices on your CDWR website.
Where would I find that? I would like the Basis of Design document in time for review and submission of comments by the deadline.

Thank you,
Jim Earley
During the COVID-19 Pandemic, I will be working from home. I can be reached at 530-736-0890
Jim Earley
Fish Biologist/CVPIA Habitat Restoration Coordinator
U.S. Fish and Wildlife Service
Pacific Southwest Region
Red Bluff Fish and Wildlife Office
10950 Tyler Road, Red Bluff, California 96080
Office Phone: 530.527.3043 x 261
Mobile/Telework: 530.736.0890
https://www.fws.gov/redbluff/afrp.html

Letter F1 Response	U.S. Fish and Wildlife Service, James Earley, Fish Biologist/CVPIA Habitat Restoration Coordinator, Pacific Southwest Region January 25, 2021

F1, Lines 22-31 The footnote referenced by the commenter was mistakenly placed in DEIR Appendix F, *Fish Passage Analysis Technical Memorandum,* as the *Basis of Design* report was a preliminary, internal document intended for use by only the Engineering Design team, and not for public release. The DEIR Appendix F footnote on page 5 referencing the *Basis of Design* report was removed, along with an additional reference to it on page 22. However, the selected invert elevation range was based primarily on the depth and velocity passage criteria for salmon and sturgeon as discussed with fish and wildlife agencies and related experts. For example, a higher invert may not provide sufficient depth, and a lower invert may result in velocities during certain flows that are too high when the gate opens. Further, as discussed in the DEIR, there tends to be a "hinge" point (or subtle high point) at an elevation of roughly 37 feet (North American Vertical Datum of 1988 [NAVD88]) just downstream of the weir that controls flow down the Tisdale Bypass; thus, an invert lower than 33 to 34 feet (NAVD88), beyond that needed to adequately meet passage depth criteria, did not provide any additional benefit with respect to the objective of adult fish passage.

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Comment Letter F2

From: Earley, James
To: DWR Tisdale Weir RehabProject
Subject: Tisdale Weir Rehab Project CEQA Comments SCH # 2019049093
Date: Monday, February 1, 2021 4:59:35 PM

Tisdale Weir Rehab Team

Here are some comments on the Tisdale Weir Rehabilitation and Fish Passage Project:

The DEIR Cumulative Impacts and Mitigation Measures under the Proposed Project does not analyze impacts to proposed interrelated fish habitat projects in the Tisdale Bypass.
It does not analyze the impacts or benefits for rearing of special status fish (juvenile salmonids) by increased frequency of days inundated in the Tisdale Bypass.

It does not analyze the impacts to additional special status fish (juvenile salmonids) being attracted into bypass from extended days of inundation and subsequently being stranded without adequate drainage or a plan to mitigate for that.

The concepts are referenced in 3.4-67-68 with no further information: “Seasonal floodplain inundation, which begins during the winter and early spring but drains before late spring and summer, is expected to be beneficial for native fish such as Chinook salmon and Sacramento splittail (Pogonichthys macrolepidotus). These conditions allow these native fish to exploit food web production by floodplain habitat largely free of competition with most non-native fish, which generally spawn later in the year when temperatures are warmer. However, the incremental benefit to special-status fish species from the increase in floodplain habitat availability in the Sutter Bypass is expected to be minimal, given the limited, marginal increase in flows that would enter the Tisdale and Sutter Bypass systems as a result of Tisdale Weir notch operations.

Implementation of the Proposed Project, in conjunction with the separately considered projects in the project vicinity, has the potential to affect sensitive habitats and special-status species, resulting in potentially significant cumulative impacts on those biological resources.”

During the COVID-19 Pandemic, I will be working from home. I can be reached at 530-736-0890

Jim Earley
Fish Biologist/CVPIA Habitat Restoration Coordinator
U.S. Fish and Wildlife Service
Pacific Southwest Region
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Letter F2 Response	U.S. Fish and Wildlife Service, James Earley, Fish Biologist/CVPIA Habitat Restoration Coordinator, Pacific Southwest Region February 1, 2021

F2, Lines 9-10 The DEIR assessed the cumulative impacts of the Proposed Project with respect to past, current, and probable future projects in the region (DEIR Chapter 4, *Other CEQA Considerations*). Criteria used to identify related projects in the project area are listed in DEIR Section 4.1.2 (page 4-3) and the list of related projects in the project area is provided in DEIR Section 4.1.3 (page 4-4). As described in DEIR Section 4.1.2 (page 4- 4), future multi-benefit actions and projects (including potential future fish habitat projects) in the Tisdale Bypass are speculative at this time because they do not meet the definition of a reasonably foreseeable project, as outlined in the criteria set forth in DEIR Section 4.1.2 (page 4-3).

F2, Lines 11-12 DEIR Tables 3.4-10 and 3.4-11 (page 3.4-57) show the relatively small (though positive) increase in flow expected to enter into the Tisdale Bypass as compared to existing conditions. Impact 3.4-8 examines how implementation of the Proposed Project could cause disturbance to fish species by modifying their habitat, including additional flow through the Proposed Project's notch and resultant increases in inundation of the Tisdale Bypass. The discussion in Impact 3.4-8, stating an expected small increase in wetted habitat for fish species, is consistent with the predicted, relatively small increase in flow. While beneficial, there still is a risk of stranding as described and mitigated in Mitigation Measure 3.4-8c, resulting in the determination of Less than Significant.

F2, Lines 14-16 As described in Response F2-2, the percentage of Sacramento River flows entering the Tisdale Bypass as shown in DEIR Table 3.4-10 would remain very small under the Proposed Project. While this may slightly increase the number of juveniles entering the Tisdale Bypass and provide longer periods of floodplain inundation, the stranding risk would remain unchanged. Regardless, as the Impact 3.4-8 analysis describes, fish rescues would still occur as before, thereby mitigating any additional stranding that may occur.

F2, Lines 18-27 See Responses F2-2 and F2-3; otherwise, this comment is noted.

F2, Lines 29-31 As noted in Response F2-1, DEIR Chapter 4 assessed the cumulative impacts of the Proposed Project with respect to past, current, and probable future projects in the region. The assessment of potential cumulative impacts on biological resources is discussed on page 4-5 of the DEIR. The DEIR states that implementing the Proposed Project in conjunction with the

separately considered projects in the project vicinity could affect sensitive habitats and special-status species, resulting in potentially significant cumulative impacts on those biological resources. The section further states that Mitigation Measures 3.4-2a, 3.4-2b, 3.4-2c, 3.4-3a, 3.4-3b, 3.4-3c, 3.4-3d, 3.4-3e, 3.4-4a, 3.4-4b, 3.4-4c, 3.4-4d, 3.4-5a, 3.4-5b, 3.4-5c, 3.4-5d, 3.4-5e, 3.4-6a, 3.4-6b, 3.4-6c, 3.4-7a, 3.4-7b, 3.4-7c, 3.4-8a, 3.4-8b, 3.4-8c, 3.4-9, 3.4-12a, 3.4-12b, 3.4-12c, and 3.4-13 would be implemented to avoid, minimize, and/or compensate for the loss of sensitive habitats and special-status species. Therefore, implementing these mitigation measures would reduce the contribution of the Proposed Project to this cumulative impact to less than cumulatively considerable.

Comment Letter S1

MR. HUITT: Hello, Stephanie, Jeff, and consultants. State Lands Commission will be providing comments, specifically to the issues related to State Lands Commission sovereign lands.

Also, I was wondering if Mr. Dragg could possibly discuss in this presentation how the proposed project will be -- or the, let's just say, the North Notch will actually work on diverting fish back into the river or outside of the weir during its planned operation?

And that's it. Thank you.

MR. GETTLEMAN: Okay. Thanks Chris.

And just to clarify, for today's meeting, we're just taking public comments, so –

MR. HUITT: That's what I thought. I just didn't know --

MR. GETTLEMAN: Yeah.

MR. HUITT: -- if you guys were going to actually provide a demonstration or propose the actual project? That's one of the last things I'm going to review –

MR. GETTLEMAN: Um-hmm.

MR. HUITT: -- in the document, so –

MR. GETTLEMAN: Yeah.

MR. HUITT: That's all.

MR. GETTLEMAN: Yeah, not during the meeting today, but that might be something that could be arranged

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as a follow-up, Chris.

MR. HUITT: That's fine. I'll talk to Jeff and Stephanie and Justin and the folks at ESA whenever they propose to do that. It's pretty interesting. I'd like to know how it's going to be done.

MR. GETTLEMAN: Sure. Yeah. Sounds good. Thank you, Chris.

MR. HUITT: Thanks Ben. Appreciate it.

MR. GETTLEMAN: Yup.

(Pause)

MR. GETTLEMAN: Okay. It's looks like Jon Munger has his hand raised, so let's get Jon un-muted. Jon, can you -- do you want to try to speak?

MR. MUNGER: Yes, Ben. Can you hear me okay?

MR. GETTLEMAN: Yes, we can. Go ahead, Jon.

MR. MUNGER: Great. Good morning. Jon Munger here with Montna Farms. We're a landowner in the Sutter Bypass, also President of the Sutter Bypass Butte Slough Water Users Association. And we'll be making comments via written comments, similar to what we did for the NOP process, so wanted to let you know that.

And just wanted to know if there ever will be an opportunity during this process for DWR to provide some sort of demonstration on the two-flow modeling to give the landowners a better understanding of what that modeling

Letter S1 Response **California State Lands Commission, Christopher Huitt**
December 8, 2020 Public Meeting Comment
(transcript pages 17 and 18)

S1, Lines 1-3 DWR thanks the State Lands Commission for its comments as a trustee and responsible agency pursuant to CEQA.

S1, Lines 4-30 DEIR Chapter 2, *Project Description*, describes how the notch would work to divert fish back into the Sacramento River or outside the weir during its planned operation. The notch and other fish passage facilities proposed with the Proposed Project are described in DEIR Section 2.3.3 (pages 2-7 through 2-12). Gate operations are described in DEIR Section 2.3.6 (pages 2-20 through 2-22).

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Comment Letter S2

STATE OF CALIFORNIA GAVIN NEWSOM, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800 Fax (916) 574-1810
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From Voice Phone 1-800-735-2922

Contact Phone (916) 574-1890

January 6, 2021

File Ref: SCH #2019049093

Stephanie Ponce, Environmental Scientist
Dept. of Water Resources
3310 El Camino Ave. Room 140
Sacramento, CA 95821

VIA ELECTRONIC MAIL ONLY (TisdaleWeirRehabProject@water.ca.gov)

Subject: Draft Environmental Impact Report for the Tisdale Weir Rehabilitation and Fish Passage Improvement Project, Sutter County

Dear Ms. Ponce:

The California State Lands Commission (Commission) staff has reviewed the subject Draft Environmental Impact Report (EIR) for the Tisdale Weir Rehabilitation and Fish Passage Improvement Project (Project), which is being prepared by the California Department of Water Resources (DWR). DWR, in proposing to carry out the Project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The Commission is a trustee agency for projects that could directly or indirectly affect State-owned sovereign land and its accompanying Public Trust resources or uses. Additionally, because the Project involves work on sovereign land, the Commission will act as a responsible agency.

Commission Jurisdiction and Public Trust Lands

The Commission has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The Commission also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6009, subd. (c); 6009.1; 6301; 6306). All tidelands and submerged lands granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust Doctrine.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The state holds these lands for the benefit of all people of the state for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the ordinary high-water mark, which is generally depicted by the

mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. On navigable non-tidal waterways, including lakes, the state holds fee ownership of the bed of the waterway landward to the ordinary low-water mark and a Public Trust easement landward to the ordinary high-water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

Based upon the information provided and a preliminary review of our records, the Sacramento River, at the Project location, is State-owned sovereign land under the jurisdiction of the Commission. Any portion of the Project that extends into the Sacramento River will require a lease from the Commission.

Project Description

DWR proposes to rehabilitate and reconstruct the Tisdale Weir. Included in the proposed Project is the installation and operation of fish passage facilities, and various associated project site improvements to meet the agency's objectives and needs as follows:

- Structurally rehabilitate Tisdale Weir to extend its design life by an additional 50 years
- Reduce fish stranding at Tisdale Weir by improving fish passage through the weir to the Sacramento River with minimal effects on facility maintenance and recreational access

From the Project Description, Commission staff understands that the Project would include the following components that have potential to affect State sovereign land:

- Construction of Project Site Improvements
- Tisdale Weir Rehabilitation
- Construction of Energy Dissipation and Fish Collection Basin
- Construction of Weir Notch and Operable Gate
- Connection Channel Construction

Environmental Review

Commission staff requests that DWR consider the following comments on the Project's Draft EIR to ensure that impacts to State sovereign land are adequately analyzed for the Commission's use of the EIR to support a future lease approval for the Project.

General Comments

1. Project Description: A thorough and complete Project Description should be included in the EIR to facilitate meaningful environmental review of potential impacts, mitigation measures, and alternatives. The Project Description should be as precise as possible in describing the details of all allowable activities (e.g., types of equipment or methods that may be used, maximum area of impact or volume of sediment removed or disturbed, seasonal work windows, locations for material disposal, etc.), as well as the details of the timing and length of activities. Specifically, the Project Description does not indicate where and when appropriate sediment characterization will occur during the Project schedule. There are several locations identified within the Draft EIR, section 2 (pages 2-15 and 2-17) which do not identify how sediment or native material will be tested for possible contamination prior to removal and placement in the designated spoils site. A sampling and analysis plan should be prepared and approved in accordance with U.S. Army Corps of Engineers and Regional Water Quality Control Board regulatory permit oversight to ensure the safety and cleanliness of the removed material during construction.

Biological Resources

2. Earthmoving/Sediment Movement Impacts: The Draft EIR should be as precise as possible describing the amount, duration, and timing of the proposed sediment and soil removal. Impacts from earthmoving and sediment discharge would affect the intensity of any environmental impacts. For example, excavating activities along the edge of the Sacramento River may impact aquatic and terrestrial species and their habitat in several ways. Disturbance of fine sediments may generate turbidity; wherein suspended particulates can impede light penetration and photosynthesis of submerged vegetation and impede organisms' ability to respire in aquatic environments. Also, excessive turbidity may react with and reduce dissolved oxygen in the water column. If toxic metals lay buried in the sediment from historic gold mining activities, they may be reintroduced into the environment and, potentially, enter the food chain, affecting both water quality and the health of aquatic organisms. The Draft EIR should analyze these potential impacts to biological resources and water quality during construction phases of the Project. If impacts prove potentially significant, possible mitigation could include the employment of silt curtains or other best management practices.

Cultural Resources

3. Title to Resources: The Draft EIR should mention that the title to all archaeological sites and historic or cultural resources on or in the tide and submerged lands of California is vested in the state and under the jurisdiction of the Commission (Pub. Resources Code, § 6313). Commission staff requests that DWR consult with Staff Attorney Jamie Garrett should any cultural resources on State lands be discovered during construction of the proposed Project. In addition, Commission staff requests that the following statement be included in the EIR's Mitigation Monitoring and Reporting Program: "The final disposition of archaeological, historical, and paleontological resources recovered on State lands under the jurisdiction of the California State Lands Commission must be approved by the Commission."

Environmental Justice

4. The Draft EIR does not state whether DWR intends to discuss and analyze potential environmental justice related issues, including an assessment of public access and equity implications and who would bear the burdens or benefits from the proposed Project. Commission staff believes the Draft EIR, as an informational public document, is an appropriate vehicle to disclose and discuss how the proposed Project would attain or be consistent with DWR's equity goals and statewide policy direction.

Thank you for the opportunity to comment on the Draft EIR for the Project. As a responsible and trustee agency, the Commission will need to rely on the Final EIR for the issuance of any new lease as specified above and, therefore, we request that you consider our comments prior to certification of the EIR.

Please send copies of future Project-related documents, including electronic copies of the Final EIR, Mitigation Monitoring and Reporting Program, Notice of Determination, and CEQA Findings when they become available. Please refer questions concerning environmental review to Christopher Huitt, Senior Environmental Scientist, at (916) 574-2080 or christopher.huitt@slc.ca.gov. For questions concerning archaeological or historic resources under Commission jurisdiction, please contact Staff Attorney Jamie Garrett, at (916) 574-0398 or jamie.garrett@slc.ca.gov. For questions concerning

126 Commission leasing jurisdiction, please contact Mary Jo Columbus, Land Management
127 Specialist, at (916) 574-0204 or maryjo.columbus@slc.ca.gov.

Sincerely,

Nicole Dobroski, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
C. Huitt, Commission
M.J. Columbus, Commission
J. Garrett, Commission

Letter S2 Response	**California State Lands Commission, Nicole Dobroski, Chief, Division of Environmental Planning and Management** January 6, 2021

S2, Lines 9-42 DWR thanks the State Lands Commission for its comments as a trustee and responsibleagency pursuant to CEQA. The comment describes the State Lands Commission's regulatory responsibility to manage all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways, including leasing authority. As presented in DEIR Section 2.4, *Anticipated Regulatory Permits and Approvals* (page 2-25), anticipated regulatory approvals include a lease from the State Lands Commission, as described in the comment.

S2, Lines 43-58 The comment describes Proposed Project activities that have the potential to affect State sovereign land within the State Lands Commission's jurisdiction. As noted in Response S2-1, prior to construction DWR would obtain a lease for permitted activities on facilitiessubject to the State Lands Commission's jurisdiction.

S2, Lines 59-62 Responses to the comments are provided in Responses S2-4 through S2-7.

S2, Lines 63-78 A thorough and complete CEQA project description is provided in DEIR Chapter 2, Project Description. The project description notes proposed activities that would involve sediment removal, the approximate number of cubic yards of sediment that would be removed, and the timing of activities during construction and maintenance of Tisdale Weir, the basin, notch, gate, and connection channel.

Impact 3.7-1 in DEIR Section 3.7, *Hydrology and Water Quality* (pages 3.7-15 through 3.7-17), describes how the contractor would be required to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit from the Central Valley Regional Water Board before the start of ground-disturbing activities, which includes a storm water pollution prevention plan (SWPPP). The impact discussion also states that implementation of Mitigation Measure 3.4-7b includes implementing best management practices (BMPs) consistent with the NPDES Construction General Permit.

As noted in Impact 3.4-13 in DEIR Section 3.4, *Biological Resources* (pages 3.4-60 through 3.4-64), DWR would meet USACE's requirements under the Clean Water Act (CWA) Section 404 permitting process and would comply with the Central Valley Regional Water Quality Control

Board's (Central Valley Regional Water Board's) requirements for compliance with CWA Section 401.

Regarding operation and maintenance activities, DWR Flood Maintenance Yard staff members adhere to operational guidelines dictated by USACE and document maintenance and operations (stated in the DEIR project description). As noted in DEIR Chapter 1, *Introduction* (page 1-2), DWR operates and maintains the Tisdale Bypass in accordance with Section 8361 of the California Water Code. Regular maintenance activities include clearing sediment and vegetation, as well as repairing and guarding against erosion and subsidence, repairing flood risk reduction facilities, and conducting other maintenance of State facilities as needed.

S2, Lines 79-95 The potential effects from earthmoving activities associated with the Proposed Project are documented throughout the DEIR and addressed by multiple mitigation measures. As described in the DEIR project description (Chapter 2), construction would take place from April 16 through October 31. The timing of this construction window aligns with the dry or non-flood season for the Sacramento River and Tisdale Weir. As such, the potential for earthmoving to result in sediment discharge directly into inundated areas is minimized. Additionally, Mitigation Measure 6.4-7a was identified to ensure that work would be suspended, in the low likelihood that Tisdale Weir was forecast to be overtopped during the construction work period.

As described in the DEIR under Impact 3.4-12, excavating or grading activities may affect terrestrial species, particularly those within the riparian area, through sedimentation, dust generation, and unintended introduction of invasive plant species, as disturbed soils may facilitate colonization of non-native plants. As such, DWR has identified multiple mitigation measures in the DEIR to address these potential effects. These include Mitigation Measure 3.4-12a, which requires staking and flagging areas at the edge of the construction footprint as well as having a biological monitor present to observe any initial grading and/or vegetation-clearing activities if work is anticipated to occur within 50 feet of riparian areas that are proposed for avoidance. Additionally, Mitigation Measure 3.4-12c calls for DWR to prepare an invasive plant management plan in the event that riparian vegetation removal is necessary for construction, with the construction contractor responsible for implementing this plan.

The potential effects of grading and excavation associated with the Proposed Project along the Sacramento River are summarized in DEIR Section 3.4, *Biological Resources* (specifically under Impact 3.4-7), and Section 3.7, *Hydrology and Water Quality* (specifically under Impact 3.7-

1). As described in Section 3.7, the construction contractor would be required to obtain an NPDES Construction General Permit from the Central Valley Regional Water Board, which would entail development of a SWPPP. This SWPPP would identify more specifically the BMPs that would be implemented for sediment and erosion control, to reduce the impacts of ground disturbance resulting from construction activities on water quality. Installation of a temporary cofferdam around the site of the new construction channel would help ameliorate the potential for sedimentation impacts from ground disturbance of the Sacramento River bank associated with the connection channel installation. Furthermore, as described in Mitigation Measure 3.4-7c, DWR would be responsible for conducting turbidity monitoring in the Sacramento River; if turbidity limits exceed the thresholds listed in the Basin Plan for the Sacramento River and San Joaquin River Basins established by the Central Valley Regional Water Board, construction activities would be slowed.

S2, Lines 96-106

DEIR page 3.5-16 (in Section 3.5, *Cultural Resources*) and page 3.9-7 (in Section 3.9, *Tribal Cultural Resources*) state that title to all abandoned shipwrecks and other (submerged) cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the State Lands Commission (Public Resources Code Section 6313[a]). Mitigation Measure 3.5-1c states that DWR will consult with the State Lands Commission if any cultural resources on State lands are discovered during project development or operation. The following text was added to the fourth bullet of Mitigation Measure 3.5-1c on DEIR pages 3.5-20 and 3.5-21:

> The final disposition of archaeological, historical, and paleontological resources recovered on State lands under the jurisdiction of SLC must be approved by the SLC.

S2, Lines 107-114

Environmental justice is not a CEQA topic. State CEQA Guidelines Section 15064(e) states that economic and social changes resulting from a project shall not be treated as significant effects on the environment. However, DWR appreciates the comment and consideration of environmental justice. Recognizing DWR's role in achieving California's obligation to universal access to safe, clean, and affordable water, DWR incorporated the Human Right to Water into its policy as of April 2021.

S2, Lines 115-127

DWR appreciates the comments submitted by the State Lands Commission and the comments have been taken into consideration. The State Lands Commission will be provided with copies of future project-related

documents, as requested. The contact information for State Lands Commission is noted.

Comment Letter S3

Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670-4599
916-358-2900
www.wildlife.ca.gov

GAVIN NEWSOM, *Governor*
CHARLTON H. BONHAM, Director

January 28, 2021

Stephanie Ponce
Environmental Scientist
California Department of Water Resources
3310 El Camino Avenue, Room 140
Sacramento, CA 95821
Stephanie.Ponce@water.ca.gov

Dear Ms. Ponce:

Subject: TISDALE WEIR REHABILITATION AND FISH PASSAGE PROJECT
DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR)
SCH# 2019049093

The California Department of Fish and Wildlife (CDFW) received and reviewed the Notice of Availability of a DEIR from the California Department of Water Resources (DWR) for the Tisdale Weir Rehabilitation and Fish Passage (Project) pursuant the California Environmental Quality Act (CEQA) statute and guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish, wildlife, native plants, and their habitat. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may need to exercise its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's Trustee Agency for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, § 1802.). Similarly, for purposes of CEQA, CDFW provides, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

CDFW may also act as a Responsible Agency under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

PROJECT DESCRIPTION SUMMARY

The Project site is located at the Tisdale Weir, on the east side of the Sacramento River, south of the town of Meridian in Sutter County, and four miles west of the Sutter Bypass.

The Project consists of rehabilitation and reconstruction of the Tisdale Weir, as well as construction of new fish passage facilities. Rehabilitation and reconstruction of the weir would include removing and replacing the southern abutment in kind and providing scour countermeasures around the reconstructed abutment; removing and replacing the northern abutment, which would incorporate an equipment pad to facilitate maintenance of the new connection channel and operable gate; filling in the depressed area between the existing gravel access road on the north side of the Tisdale Bypass and Garmire Road with engineered backfill material to construct a level area for the control building and equipment pad; patching, resurfacing, and sealing the existing concrete sill surface of the weir with a cementitious or epoxy material; partially demolishing, removing, and reconstructing the existing energy dissipation basin with a basin that would serve an energy dissipation function; installing provisions for monitoring equipment in the weir and/or on abutments or adjacent banks; and investigating the integrity of the sheet pile wall through excavation and rehabilitating if necessary.

The fish passage facilities constructed for the Project would include reconstruction of an integrated energy dissipation and fish collection basin on the downstream side of the weir; installation of a notch, an operable gate (for flow regulation), and attendant facilities at the north end of the weir; and construction of a channel connecting the notch in the weir to the Sacramento River. The fish passage facilities are intended to provide passage for all species; however, designs would focus on Chinook salmon (*Oncorhynchus tshawytscha*) and green sturgeon (*Acipenser medirostris*). The facilities' design is intended to meet fish passage criteria for Chinook salmon and green sturgeon migrating upstream from the Tisdale Bypass to the Sacramento River after river flows have overtopped the weir and spilled into the Tisdale Bypass. During and after a spill event, for several days to several weeks or longer, the facilities' gate would be operated to maintain a connection between the Tisdale Bypass and the area behind the weir, and to manage flow and water levels in a manner conducive to fish movement out of the Tisdale Bypass and into the Sacramento River.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations presented below to assist DWR in adequately identifying and/or mitigating the Project's significant, or potentially significant,

direct and indirect impacts on biological resources. CDFW has organized its comments based on the order information is presented in the DEIR.

Chapter 2. Project Description

2.3.2 Tisdale Weir Rehabilitation and Reconstruction

The DEIR describes installing provisions for monitoring equipment such as stage gages, cameras, and telemetry antennae in the weir and/or on abutments or adjacent banks. Although, the DEIR generally describes installation provisions for cameras, it does not describe installation provisions for specific fish monitoring equipment. To help ensure the project minimizes effects to fish, the DEIR should include fish monitoring to provide data that would guide adaptive management of operations. CDFW recommends that DWR also install fish monitoring equipment such as an Adaptive Resolution Imaging Sonar (ARIS) camera, which would be effective at the weir gate as well as within the fish collection basin. Having sonar monitoring at the gated notch would help assess the flow conditions that favor fish movement and document the effectiveness of the new fish passage facilities. The DEIR and designs should specify where space will be built into the structure to allow for monitoring equipment. Planning for monitoring equipment is encouraged and should be in place and ready for implementation for first operation of the notch gate to facilitate both real-time and long-term monitoring.

In addition to ARIS monitoring, acoustic telemetry or passive integrated transponder (PIT) tag arrays would provide important data on movement around and through the weir notch as well as throughout the Tisdale Bypass reach. CDFW recommends that arrays be strategically placed at the weir notch and throughout the Project area. Many programs in the Sacramento River and Butte Creek are marking juvenile salmon and sturgeon with acoustic tags. Having arrays at the weir and in the Tisdale Bypass would provide insight into the project's effects on marked fish migrating in the Sacramento River and Butte Creek systems. This additional monitoring could assist in meeting the Project objective of reducing fish stranding at the weir by identifying areas of stranding concern and direction of fish movement through the Tisdale Bypass to help facilitate improved fish passage through the weir and minimize impacts to special-status fish species.

2.3.3 Fish Passage Facilities

The DEIR discusses the use of sub-angular riprap to prevent scour and facilitate fish passage and drainage of the energy dissipation and fish collection basin. CDFW is concerned that the use of sub-angular riprap may: 1) cause injury to special-status fish species and 2) provide increased predator habitat. CDFW recommends the DEIR evaluate use of grouted cement, engineered concrete and energy dissipaters, or larger rounded material with a wider placement to minimize the potential of injury to fish and reduce predators from holding between materials.

Moreover, it is unclear whether the riprap roughness was included in the fish passage and other hydraulic modeling. The DEIR should indicate what was considered in the fish passage and hydraulic modeling. Additionally, less abrasive options mentioned above, that will both prevent scour and continue to improve ease of maintenance while still

encouraging fish movement out of the energy dissipation and fish collection basins, should be analyzed in the fish passage and hydraulic modeling.

2.3.6 Operations and Maintenance

Normal operations and maintenance of the proposed Project are detailed in this document. However, operations during gate outages, power failures, or other foreseeable problems with the gate structure are not described. It is unclear how fish returning to the Sacramento River during outage situations may be impacted. CDFW recommends that operations be described during the following operations outage situations and the DEIR incorporate specific analysis that details how these outage scenarios will be addressed:

- Mechanical (Gate Failure)
- Electrical (Gate Failure)
- Debris lodging in notch causing dewatering and fish entrapment/stranding
- Debris blocking the fish passage basin causing fish entrapment/stranding

In the event of gate failure, the DEIR should also clarify how velocity and depth criteria will be maintained, as well as how the basin will be dewatered quickly to repair failed gates when the facility is operating as a fish passage structure

Chapter 3. Environmental Setting, Impacts, and Mitigation Measures

3.4.3 Environmental Setting

Table 3.4.2

Table 3.4-2 lists special-status fish species occurring or potentially occurring in the Project area. CDFW recommends the table include Sacramento splittail (*Pogonichthys macrolepidotus*), which occurs in the Sutter Bypass (DFG, 1999) and hardhead (*Mylopharodon conocephalus*), which occurs in the Sacramento River and Sutter Bypass. Both are listed as California species of special concern.

Spring-run Chinook Salmon

The DEIR states juvenile spring-run Chinook salmon emerge in March and April. It should be noted that emergence can occur as early as late November in Butte Creek (DFG, 2004). The DEIR also describes spring-run fry movement between February and June. The DEIR should also acknowledge that sac fry may be actively emigrating in Butte Creek as early as late November (DFG, 2004).

3.4.4 Impacts and Mitigation Measures

California Endangered Species Act

CDFW is responsible for ensuring appropriate conservation of fish and wildlife resources including threatened, endangered, and/or candidate plant and animal species, pursuant to the California Endangered Species Act (CESA). CDFW recommends that a CESA Incidental Take Permit (ITP) be obtained if the Project has the potential to result in “take”

(Fish & G. Code § 86 defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") of State-listed CESA species, either through construction or over the life of the Project, including operations and maintenance.

Please note that mitigation measures that are adequate to reduce impacts to a less-than significant level to meet CEQA requirements may not be enough for the issuance of an ITP. To issue an ITP, CDFW must demonstrate that the impacts of the authorized take will be minimized and fully mitigated (Fish & G. Code §2081 (b)). To facilitate the issuance of an ITP, CDFW recommends the EIR include measures to minimize and fully mitigate the impacts to any State-listed species the Project has potential to take. CDFW encourages early consultation with staff to determine appropriate measures to facilitate future permitting processes.

State-listed species with the potential to occur in the area include but are not limited to: Giant garter snake (GGS)(*Thamnophis gigas*), Swainson's hawk (*Buteo swainsoni*), winter-run and spring-run Chinook salmon (*O. tshawytscha*).

The DEIR does not adequately discuss the potential of the Project to take State-listed species nor provide adequate avoidance, minimization, and mitigation measures. CDFW provides the following comments on specific Impact Analysis and Mitigation Measures to assist DWR in mitigating the project impacts to a less than significant level:

Mitigation Measure 3.4-3e states that "with prior approval by CDFW and USFWS, the designated biologist may capture the snake and relocate it unharmed to suitable habitat at least 200 feet from the project area." Please note that the designated biologist must be knowledgeable and experienced in the biology, natural history, capture, and handling of GGS (including possession of appropriate handling permits). Handling GGS will require a take authorization as "catch" and "capture" are methods of take. CDFW recommends an ITP is obtained for the Project. An ITP would require that a GGS relocation plan be developed and submitted to CDFW for approval prior to initiating Project activities.

Mitigation Measure 3.4-4b indicates preconstruction surveys for western pond turtle will occur within 7 days before the establishment of staging areas and the start of construction and maintenance activities. CDFW recommends that an additional survey is conducted within 48 hours prior to starting construction activities. If western pond turtle is encountered during surveys, CDFW recommends that a site-specific avoidance, minimization, and/or relocation plan be prepared by the designated biologist in coordination with CDFW.

Mitigation Measure 3.4-5b discusses buffer zones established around active nests of special-status birds or species protected under the Migratory Bird Treaty Act (MBTA). The measure states that the Project biologist shall determine the appropriate buffer zone(s) to be used, which are typically 100 feet for migratory bird nests and 250 feet for raptor nests. CDFW recommends against pre-determined buffer zones. As proposed, these could be inadequate to reduce impacts to nesting birds to a less than significant level. Buffer zones should be determined by the designated biologist in coordination with CDFW on a case-by- case basis depending on species, stage of nesting effort, type of construction activities and any geographic or topographical barriers between the nest and the proposed activities. CDFW recommends that if any active nests are found,

buffer zones shall be determined by the designated biologist in consultation with CDFW before commencement of construction activities.

Mitigation Measure 3.4-5d discusses surveys that would take place should vegetation removal begin during Swainson's hawk nesting season; however, the measure does not propose adequate actions the Project would implement to reduce impacts to a less than significant level should nesting occur. CDFW recommends that a designated biologist conduct Swainson's hawk protocol-level surveys during all survey periods throughout the nesting season prior to the commencement of all construction activities, regardless of potential vegetation removal. Protocol-level surveys should be conducted in accordance with Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee, 2000).

Mitigation Measure 3.4-5e discusses if active Swainson's hawk nests are found within 0.25 mile of construction or maintenance activities. CDFW recommends including nests that are found within 0.50 miles of the Project area. Nests found within 0.50 miles should be monitored either continuously or periodically depending on the construction or maintenance activities and level of disturbance until young have fledged, are feeding independently and are no longer dependent on the nest.

Furthermore, all measures to protect nesting birds should be performance-based. While some birds may tolerate disturbance within 250 feet of construction activities, other birds may have a different disturbance threshold and "take" could occur if the temporary disturbance buffers are not designed to reduce stress to that individual pair. CDFW recommends including performance-based protection measures for avoiding all nests protected under the MBTA and Fish and Game Code. Additionally, CDFW recommends on-site monitoring by a designated biologist familiar with the species, as buffers may need to be increased based on the birds' tolerance level to the disturbance as activities change and as the birds' transition through different stages of the nesting cycle.

Impact 3.4-8 discusses disturbance to fish species and their habitat by modifying aquatic habitat. The impact analysis indicates that fish in the Tisdale Bypass are expected to be found mostly in its southern portion due to the natural topography and the presence of mature riparian vegetation. CDFW agrees fish naturally navigate to the south side of the Tisdale Bypass and recommends the DEIR include a more detailed discussion of existing conditions, describing how implementation of the project may change the occurrences of stranding (baseline condition), and how the Project changes the way the Tisdale Bypass drains to encourage entrained juvenile special-status fish movement to prevent stranding.

Impact 3.4-8 discusses the placement of approximately 300 cubic yards of riprap to serve as scour protection for the new connection channel. The use of riprap may cause injury to State-listed fish species and increase predator habitat. To minimize impacts to special- status fish species, CDFW recommends the DEIR evaluate the use of grouted cement, engineered concrete and energy dissipaters, or larger rounded material with a wider placement to minimize impacts to fish species and reduce predator habitat.

Mitigation Measures 3.4-8b and 3.4-8c identify how a fish rescue plan would be in place to relocate any stranded fish within the project footprint before the start of construction activities; how fish would be rescued from the cofferdam area before

dewatering actions; and how further fish rescues could be triggered once construction is completed. Please note that although the DEIR indicates fish rescue plans for the Project would be submitted to and approved in coordination with CDFW, as stated in the mitigation measures, CDFW would like to iterate fish rescue efforts are the responsibility of the Project proponent. Additionally, the DEIR states that winter-run and spring-run Chinook salmon are present in the project area, therefore potential fish rescues are likely to result in take. Handling CESA-listed species will require a take authorization as "catch" and "capture" are methods of take. CDFW recommends an ITP is obtained for any take likely to occur over the life of the Project, including operations and maintenance.

Impact 3.4-10 summarizes the risk of predation to native fish related to Project impacts from construction and operations and maintenance activities as less than significant because construction impacts are considered temporary and long-term operation of the Project is expected to reduce predation. However, the DEIR did not evaluate potential impacts associated with increased predator habitat and therefore increased predation due to the use of riprap within the energy dissipation, fish collection basin, and new connection channel. The DEIR should include the impacts associated with increased predation due to the use of riprap. CDFW recommends including an evaluation of the use of riprap against other materials such as grouted cement, engineered concrete and energy dissipaters, or larger rounded material with a wider placement, which would minimize the use of crevices by predators.

Impact 3.4-11 indicates once the Project is operational, the newly constructed notch in Tisdale Weir would improve fish passage conditions for adult special-status anadromous fish in the Tisdale Bypass and the marginal increase in flows from the Project are not expected to have a substantial effect on the attraction of anadromous fish into the Tisdale Bypass from the Sacramento River. However, it is unknown how fish will respond to the new weir notch and associated flow increases. The DEIR should acknowledge there is no data available on how the new notch may affect juvenile salmonids and sturgeon. Having longer periods of connectivity to the Sacramento River may attract more emigrating juveniles and sturgeon into the Tisdale Bypass while the notch is open. To ensure the Project is meeting its objectives to improve fish passage and reduce impacts to special- status fish, the DEIR should include monitoring to guide adaptive management of the operations of the facility. CDFW recommends the Project include focused monitoring, as described above in the Project Description section, to provide data necessary to look at behavior, movement, and problem areas for juvenile salmon and sturgeon in the Project area and Tisdale Bypass.

3.7 Hydrology

Impact 3.7-3 acknowledges the frequency of sediment removal activities may vary based on the type of water year; the rate at which sediment and debris accumulate at the site; and the effects of the magnitude of sediment and debris accumulation on conveyance capacity, energy dissipation, and/or fish passage conditions. Sediment removal activities by DWR have taken place in 2007 and most recently in 2020. Accumulated sediment and vegetation or other debris, along with improperly functioning structures, can reduce channel capacity; deflect, divert, and inhibit flows; cause bank and levee erosion; or increase the risk of levee overtopping and failure. All these scenarios increase risk to special status fish species, particularly fish stranding

occurrences. Deposited sediment also increases the likelihood of juvenile special-status fish species being stranded and unable to escape with the draining water. Sediment management should occur at greater frequency to limit creation of pockets or isolated pools and minimize stranding issues. No mitigation measures are proposed to reduce impacts associated with the effects of increased sediment deposition. To minimize impacts to special-status fish species, CDFW recommends DWR implement sediment management activities on a regular frequency to reduce build up rather than on an as needed basis. Regular sediment management along with fish monitoring in the Tisdale Bypass would help reduce impacts to special-status fish species.

Chapter 4. Other CEQA Considerations

4.1.2 Criteria for Identifying Related Projects in the Project Area

The DEIR must contain a reasonable analysis of the Project's contribution in the context of the significant cumulative impacts. It must identify related projects through a list or projection to summarize effects of the related projects, and reasonably analyze the cumulative contribution of the Project, as well as provide mitigation measures for that contribution (CEQA Guidelines §15130(b)).

The Mid and Upper Sacramento River Regional Flood Management Plan (MUSR RFMP) is one of six Regional Flood Management Plans that were funded by DWR following the adoption of the 2012 Central Valley Flood Protection Plan (CVFPP). The Tisdale Bypass is located within the boundaries of the MUSR RFMP. One of the key recommendations for the MSUR RFMP was to develop a sustainable plan for the long-term operations of the Tisdale & Sutter Bypass system. In 2020 DWR provided funding of the Sutter and Tisdale Bypasses Flood & Multi-Benefit Strategy and Management Plan (Management Plan) to develop a comprehensive plan for management of the Sutter and Tisdale Bypasses for sustainable flood operations conveyance while also improving floodplain habitat. The Management Plan is being coordinated with the Tisdale Weir Rehabilitation and Fish Passage Project and seeks to take advantage of the modifications being made to the Tisdale Wier by DWR. CDFW's 2019 Notice of Preparation comment letter for the DEIR recommended analyzing the Tisdale Weir Rehabilitation and Fish Passage Project as well as building the Tisdale Bypass Management Plan into the Project Description framework. CDFW recognizes the Tisdale Bypass Management Plan has evolved into what is now the Management Plan. CDFW would like to reiterate that not including the potential future Management Plan in the overall Project planning effort (weir rehabilitation and fish passage, as well as management of habitat within the Tisdale Bypass), could limit future management opportunities and needed flexibility. Additionally, a feasibility study has been funded and is being conducted for the replacement and/or removal of Weir 1 on the west borrow of the Sutter Bypass. This is a fish passage improvement project. Depending on the results of the study, it could show a potential change in water delivery to nearby ag lands or an increase in wells. The Sutter Bypass Weir 1 project is funded by Central Valley Project Improvement Act (CVPIA). Finally, planning for the Sites Reservoir project is well underway.

CDFW recommends DWR analyze the cumulative impacts from the Tisdale Weir Rehabilitation and Fish Passage Project by disclosing the relationship with the proposed Project, the Management Plan, the Sutter Bypass Weir 1, and the Sites Reservoir projects and discuss how the projects could affect each other in the final EIR. By

analyzing the cumulative impacts and disclosing project relationships, DWR can efficiently show a good faith effort at full disclosure to address potential significant impacts and can show how all potentially significant impacts will be avoided, minimized or mitigated.

Chapter 5. Alternatives

Consistency with the Central Valley Flood Protection Plan

The DEIR briefly discusses how the identified goals and planning objectives for rehabilitating Tisdale Weir and for addressing fish passage and stranding issues at the weir are consistent with the CVFPP goals in Table 5-1. Although the CVFPP is referenced in the DEIR, it is also vital the DEIR demonstrate consistency with the Central Valley Flood Protection Plan Conservation Strategy (CVFPPCS). CDFW recommends Chapter 2.2, Project Objectives, incorporate a discussion of how the proposed Project objectives achieve the goals of not only the CVFPP but also the accompanying CVFPPCS and ultimately the Central Valley Flood Protection Act (California Water Code, § 9616[a]). More specifically, how implementation of the proposed Project and associated ecosystem improvements will contribute to the measurable objectives identified within CVFPPCS. The CVFPPCS, developed by DWR for adoption and integration with the 2017 update of the CVFPP, overlaps the Project area. The CVFPPCS identifies long-term measurable objectives that will be used to guide and inform the planning, funding, and implementation of multi-benefit and strategic advance mitigation projects and the operations and maintenance activities needed to maintain them within the Central Valley Flood System.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be submitted online or mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov.

FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW.

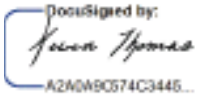
Payment of the fee is required for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089.)

CONCLUSION

Pursuant to Public Resources Code §21092 and §21092.2, CDFW requests written notification of proposed actions and pending decisions regarding the proposed project. Written notifications shall be directed to: California Department of Fish and Wildlife North Central Region, 1701 Nimbus Road, Rancho Cordova, CA 95670 or emailed to R2CEQA@wildlife.ca.gov.

CDFW appreciates the opportunity to comment on the DEIR to assist in identifying and mitigating Project impacts on biological resources. CDFW personnel are available for consultation regarding biological resources and strategies to minimize and/or mitigate impacts. Questions regarding this letter or further coordination should be directed to Lauren Mulloy, Senior Environmental Scientist (Specialist) at (916) 358-2909 or Lauren.Mulloy@wildlife.ca.gov.

Sincerely,



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REFERENCES

Calif. Dept. of Fish and Game (DFG). Butte Creek Spring-Run Chinook Salmon, *Oncorhynchus tshawytscha,* Juvenile Outmigration and Life History, 1995-1998. Hill, K.A., and J. D. Webber. 1999. Inland Fisheries Admin. Report No. 99-5, 1999. 46 pp.

DFG. Butte Creek and Big Chico Creeks Spring-Run Chinook Salmon, *Oncorhynchus tshawytscha,* Life History Investigation, 1998-2000. Ward, P.D. and T. R. McReynolds. 2004. Inland Fisheries Admin. Report No. 2004-2, 2004. 61 pp.

Swainson's Hawk Technical Advisory Committee. 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley.

Letter S2 Response	**California State Lands Commission, Nicole Dobroski, Chief, Division of Environmental Planning and Management** January 6, 2021

S3, Lines 12-39 DWR thanks CDFW for its comments as a trustee and responsible agency pursuant to CEQA. The comment describes CDFW's jurisdiction over the conservation, protection, and management of fish and wildlife resources. As presented in DEIR Section 2.4, *Anticipated Regulatory Permits and Approvals* (page 2-25), anticipated regulatory approvals include a lake and streambed alteration agreement and California Endangered Species Act consultation related to take authorization with CDFW, as described in the comment.

S3, Lines 40-70 The comment describes the Proposed Project. The comment is noted.

S3, Lines 71-75 Responses to CDFW's comments and recommendations on the DEIR are provided in Responses S3-4 through S3-23.

S3, Lines 77-103 The objective of the Proposed Project (DEIR Section 2.2, *Project Objectives*, page 2-1) is to reduce fish stranding at Tisdale Weir by improving fish passage through the weir to the Sacramento River with minimal effects on facility maintenance and recreational access. Monitoring may help guide adaptive management and/or contribute to broader monitoring efforts, and the comment in this respect is noted, but suggesting that it would minimize as-yet-unidentified effects prior to Project installation is speculative. In the unlikely event that the Proposed Project does not perform as designed and fish remain stranded below Tisdale Weir, DWR has identified Mitigation Measure 3.4-8c (DEIR page 3.4-53) as a contingency action to protect special-status fish. The mitigation language is as follows:

> The Technical Working Group, consisting of qualified technical experts from DWR, NMFS, and CDFW, will develop triggers for fish rescue events to occur during operation of the Proposed Project. A fish rescue could be needed because of a physical obstruction, adverse water quality within the fish passage facilities, observations that fish in the basin are in poor health, or other reasons. If deemed necessary, a fish rescue plan will be developed and will include the same elements as described in Mitigation Measure 3.4-8b.

The Proposed Project also requires consultation with the National Marine Fisheries Service, a California Endangered Species Permit from CDFW,

and a Lake and Streambed Alteration Agreement from CDFW. DWR would comply with all requirements defined in these permits/agreements. Further, accommodations and related appurtenances and infrastructure for monitoring are being developed as the Project design process progresses (e.g., in the 65-percent plans). All the methods and considerations are still on the table for discussion.

S3, Lines 104-111

The primary features for fish passage are the energy dissipation and fish collection basin and the connection channel from the Sacramento River to the Tisdale Bypass, both of which would be constructed of concrete (including the entire cross section of the connection channel). Sub-angular rock slope protection would be used in limited, boundary areas to form stable transitions (e.g., transitioning from concrete design grades to undisturbed ground) and for scour and erosion protection. But, to reiterate, the entire cross-section of the connection channel would be concrete. The engineering feasibility of using various material types was considered, but sub-angular rock as described in the DEIR was deemed most appropriate for this application and at this point in the design process. It is a necessary protective material. Subsequent DWR maintenance projects associated with sediment removal conducted in accordance with Water Code Section 8361 would generally avoid removing sediment collected in the rock slope protection, should it be deposited there.

S3, Lines 112-117

As noted in Response S3-5, sub-angular rock slope protection as described in the DEIR was deemed the most appropriate for this Proposed Project. A number of notch configuration alternatives were assessed in DEIR Appendix F, *Fish Passage Analysis Technical Memorandum*. The hydraulics of the weir and notch are complex, but all primary flow boundaries (e.g., the connection channel energy dissipation and fish collection basin) and the subsequent momentum losses are controlled in large part by the notch geometry and resultant flow field variations, as well as the difference in water surface elevation between the Sacramento River and the Tisdale Bypass; these processes are represented in the two-dimensional hydraulic model used in the analysis. While riprap was not considered explicitly in the modeling analysis (as all primary flow boundaries, e.g., the connection channel and energy dissipation and fish collection basin, comprise concrete and were modeled as such), some bank areas (including areas with rock) were represented with a higher Manning's n-value for the Project condition. Regardless, based on experience with the model and this location, DWR's modelers believe that it would not materially affect the hydraulics with regard to the fish passage assessment results to be modeled with still different values.

S3, Lines 118-129

From a safety perspective, maintenance activities, such as the removal of sediment and debris deposited from flood events, would be limited to the time of year when the bypass is dry. During the events that the commenter references, DWR acknowledges that the fish passage component of the Proposed Project may be hindered; however, the potential for debris lodging and blocking has been reduced by designing the notch on the north end of the weir. Field observations, a historical assessment, and mapping of large wood debris accumulated at Tisdale Weir indicate that most debris is deposited along the southern two-thirds of the weir, with the largest accumulations occurring in the Tisdale Boat Launch Facility's parking lot (Appendix B in DEIR Appendix J, *Tisdale Weir Rehabilitation and Fish Passage Project Engineering Feasibility Report*). Further, the type of gate that is planned for installation is such that it can be manually operated without electricity. DWR would implement Mitigation Measure 3.4-8c (see Response S3-4) to further respond to unplanned situations.

S3, Lines 130-132

See Response S3-7 regarding operations during gate failure. Mechanical or electrical gate failures would be addressed and repaired as they arise (as with any applicable DWR facility). The plan for gate operations may change or evolve based on further agency consultation during the permitting process or longer-term adaptive management actions, or both.

The details on how fish would be rescued would be described in the fish rescue plan that would be submitted to CDFW for review as described in Mitigation Measure 3.4-8c.

S3, Lines 134-146

Both Sacramento splittail (*Pogonichthys macrolepidotus*) and hardhead (*Mylopharodon conocephalus*) were added to DEIR Table 3.4-2 for the list of special-status species considered. The description of Central Valley spring-run Chinook salmon on DEIR page 3.4-11 was also amended to clarify that juvenile spring-run Chinook salmon have been documented to emerge as early as late November in Butte Creek. However, because the work period is from April 16 to October 31, and the DEIR already characterizes the period of spring-run fry movement as between February and June, the implication of this clarification regarding Butte Creek spring-run Chinook will not affect the likelihood for spring-run Chinook salmon juveniles to be in the vicinity of the work area when construction is taking place. As such, there is no need for any corresponding changes to the existing impact analyses or mitigation measures regarding fisheries resources in DEIR Section 3.4, *Biological Resources*.

S3, Lines 148-166 DWR agrees with the commenter that "…mitigation measures that are adequate to reduce impacts to a less-than-significant level to meet CEQA requirements may not be enough for the issuance of an ITP [incidental take permit]." DWR will be consulting with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and CDFW to further evaluate potential impacts and the need for specific permits for State-listed threatened or endangered species under the jurisdiction of these agencies. For any permits obtained or consultations completed, DWR will follow the requirements and recommendations. DEIR page 3.4-52 was amended to explain that this process will take place for these fish species.

Implementation of Mitigation Measures 3.4-3a, 3.4-3b, 3.4-3c, 3.4-3d, and 3.4-3e (DEIR pages 3.4-37 and 3.4-38) would reduce potentially significant impacts on giant garter snake to a less-than-significant level. As described in DEIR Chapter 4, *Project Description*, most of the construction work would occur in the Tisdale Bypass. As described in DEIR Section 3.4.4, *Impacts and Mitigation Measures*, the Tisdale Bypass does not provide suitable habitat for the giant garter snake, given that it lacks water for the majority of the year, is surrounded by dense riparian vegetation that would inhibit giant garter snakes from entering the bypass, and is routinely mowed, which limits upland cover. Implementation of Mitigation Measure 3.4-3d would entail extensive placement of snake exclusion fencing in any areas in the vicinity of potentially suitable aquatic habitat to prevent snakes from entering any active work areas. As described in Mitigation Measure 3.4-3e, in the event a snake is discovered within the project area and cannot be captured and relocated unharmed, DWR would consult with CDFW and USFWS to identify appropriate actions before allowing any work in the area of the snake to resume.

Implementation of Mitigation Measure 3.4-5d (DEIR page 3.4-45) would reduce potentially significant impacts on Swainson's hawk to a less-than-significant level by requiring that a protocol-level survey be conducted in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee, 2000) in the event that vegetation removal coincides with the Swainson's hawk nesting season. Mitigation Measure 3.4-5e (DEIR page 3.4-45) outlines the steps that would be undertaken if active nests are found, including consultation with CDFW to establish appropriate avoidance measures.

S3, Lines 167-179 Mitigation Measure 3.4-3e (DEIR page 3.4-38) was amended to clarify that the giant garter snake designated biologist will be either a USFWS representative or have a USFWS 10(a)(1)((A) permit or DWR will have

obtained a take permit under the California Endangered Species Act (CESA). This Proposed Project is not likely to encounter a situation where giant garter snake would have to be handled.

S3, Lines 180-186

Mitigation Measure 3.4-4b (DEIR page 3.4-42) was revised to state that preconstruction surveys for western pond turtle will occur within 48 hours of starting construction activities.

Mitigation Measure 3.4-4c (DEIR page 3.4-42) was revised to state that if a western pond turtle is encountered during the preconstruction survey and it is determined that relocation is necessary, a relocation plan will be developed by a designated biologist in consultation with CDFW.

S3, Lines 187-198

The inclusion of typical buffer distances is meant to provide the reader a frame of reference for common practice for avoidance distances of active nest sites of special- status birds or species protected under the Migratory Bird Treaty Act (MBTA), based on the types of activities that would occur under the Proposed Project. The buffer zones listed in Mitigation Measure 3.4-5b (DEIR pages 3.4-44 and 3.4-45) are based on the inherent acknowledgement that certain species, such as western yellow-billed cuckoo, are more sensitive to human disturbances and thus are expected to warrant a larger buffer. As explained in Mitigation Measure 3.4-5b, the exact buffer distance would be up to the discretion of the qualified biologist, unless a qualified CDFW biologist determines that smaller buffers would be sufficient to avoid impacts. Because nests would be monitored daily, these buffer distances could be adjusted as needed based on the biologist's observations of bird behavior. As such, the measure as presented in the DEIR is considered to be fully adequate to contribute to reducing potential impacts on nesting birds to a less-than-significant level.

S3, Lines 199-207

Mitigation Measure 3.4-5d (DEIR page 3.4-45) was revised so that it removes the clause that protocol-level preconstruction survey(s) will be conducted contingent on whether vegetation removal is scheduled to begin during the Swainson's hawk nesting season. The surveys will be conducted regardless.

S3, Lines 208-222

Mitigation Measure 3.4-5e (DEIR page 3.4-45) was revised to state that if active Swainson's hawk nests are found within 0.5 mile of construction and maintenance activities, the findings will be reported to CDFW following the preconstruction survey. In addition, Mitigation Measure 3.4-5e was revised to state that any nests found within 0.5 mile of the Project area will

be monitored either continuously or periodically, depending on the construction or maintenance activities and level of disturbance.

The measure was also revised to state that if the biologist determines that construction activities cause or contribute to a bird being flushed from the nest, or observes other signs of disturbance of a nesting bird at a level that has potential to cause nest failure, the existing buffer distance will be reevaluated by the qualified biologist and in consultation with CDFW and will be revised or increased as necessary.

The biologist assigned to conduct the nesting bird monitoring will not necessarily be a designated biologist for any given MBTA species encountered at the Project site, because being a designated biologist for a particular species implies that the species is covered by the CESA (which many MBTA species are not). Any biologist responsible for monitoring of nesting bird activities will have experience conducting nesting bird monitoring across a wide range of different species.

S3, Lines 223-231 The Proposed Project is not expected to alter the habitat downstream of the new fish passage improvements, so the current drainage conditions are expected to be similar to existing conditions. In the Introduction on page 1-2 of the DEIR, DWR provides the baseline condition where fish are being stranded after weir overtopping events. The DEIR also describes that a notch would be installed in the weir, and DEIR page 2-8 states that the new basin would be sloped to the notch to allow water to drain to the notch, which would reduce fish stranding. Further, on DEIR page 2-9, DWR explains that the basin would be designed so that when water from the Sacramento River was no longer flowing into the basin, the pool area would recede concurrent with the recession of the river and encourage fish to move from the basin to the river. Finally, because the fish rescue activities that occur under existing conditions are planned to continue (as described in Mitigation Measure 3.4-8c, DEIR page 3.4-53), stranding risk is not expected to change under the Proposed Project versus existing conditions.

S3, Lines 232-237 The engineering feasibility of using various material types was considered, but angular rock revetment as described in the DEIR was deemed the most appropriate for this Proposed Project.

S3, Lines 238-250 Thank you; comment noted. The details on how fish will be rescued will be described in the rescue plan that will be submitted to CDFW for review as described in Mitigation Measure 3.4-8c. The suggestion to obtain an ITP for handling of CESA-listed species during rescue efforts is noted.

S3, Lines 251-261 A discussion of predation risk due to adding in additional hard structures associated with the fish passage structure that may cause predators to congregate was added to DEIR page 3.4-55. However, the Proposed Project's benefits for fish passage are expected to reduce the amount of passage delays at the weir, thereby reducing the exposure time of fish to predators. Therefore, the impact on predation is still expected to be less than significant.

S3, Lines 262-276 As noted in Response S3-4, accommodations and related appurtenances and infrastructure for monitoring are being developed as the project design process progresses (e.g., in the 65-percent design plans) and based on further agency input through the permit application processes with the regulatory agencies.

S3, Lines 278-295 As noted in DEIR Section 1.2, *Project Background*, DWR operates and maintains the Tisdale Bypass in accordance with Section 8361 of the California Water Code. Maintenance activities include clearing sediment and vegetation, repairing and guarding against erosion and subsidence, repairing flood risk reduction facilities, and conducting other maintenance of State facilities as needed. Many maintenance activities occur annually, but some are performed less frequently, as needs arise and funds become available. CDFW's recommendation to implement sediment management activities in the Tisdale Bypass on a regular frequency to reduce buildup rather than on an as-needed basis is noted.

The DEIR Project Description (Chapter 2) describes the frequency and timing of sediment and debris removal activities that would occur with the Proposed Project in the Tisdale Weir and basin (within the Project footprint shown in DEIR Figures 2-2 through 2-4) and maintenance of the weir notch, operable gate, and connection channel.

S3, Lines 297-335 Draft EIR Section 4.1.2 notes that DWR is funding regional flood management plans in support of the Central Valley Flood Protection Plan, including the Mid and Upper Sacramento River Regional Flood Management Plan, and is assessing regional flood management such as future management of the Tisdale and Sutter Bypasses to sustain flood conveyance and reduce flood risk, improve floodplain habitat, and support sustainable operations and maintenance practices. However, as stated in the DEIR, future multi-benefit actions and projects in the Tisdale and Sutter Bypasses (including the Sutter Bypass Weir 1 Removal Project) by DWR and others are speculative at this time and are not evaluated in the DEIR because they do not meet the definition of a reasonably foreseeable project, as outlined by the criteria in DEIR Section 4.1.2. As of January 2021, the

	Sites Reservoir Project was being revised and a new Revised Draft EIR/Supplemental Draft EIS is currently being prepared. Therefore, sufficiently detailed information about the Proposed Project was not available to allow meaningful analysis without undue speculation at the time the DEIR was released.
S3, Lines 337-353	Table 5-1 (pages 5-5 and 5-6) in DEIR Chapter 5, *Alternatives*, includes reference to achieving the ecological goals and objectives of the Central Valley Flood Protection Plan's Conservation Strategy; see the subparts of the "Central Valley Flood Protection Plan Goals" and the "Fish Passage Objectives" rows in that table. Specifically, this includes measurable objectives for species (salmonids and sturgeon), reducing stressors (fish passage), and ecosystem processes (or as termed in the table, functions; floodplain inundation will support species recovery). More specifically, implementation of the Proposed Project would contribute to these measurable objectives by (1) providing improved flow connectivity from the river to the bypass/floodplain of the Tisdale Bypass, with fish passage; (2) reducing the existing fish passage stressor; and (3) increasing floodplain inundation in the Tisdale Bypass as an inherent outcome of flow through the notch. The commenter's suggestion to incorporate a discussion of how the project objectives achieve the goals of the Central Valley Flood Protection Plan, the Central Valley Flood Protection Plan Conservation Strategy, and the Central Valley Flood Protection Act into DEIR Chapter 2.2, *Project Objectives*, is noted.
S3, Lines 355-363	No special-status species were detected during the biological resources survey and focused botanical surveys that were completed for the Proposed Project (DEIR pages 3.4-8 and 3.4-9) and the California Natural Diversity Database no longer tracks sensitive natural communities, only special-status species.
S3, Lines 365-370	DWR will pay the environmental filing fee when the Notice of Determination is filed.
S3, Lines 372-376	DWR will provide CDFW with written notification of proposed actions and pending decisions regarding the Proposed Project. The mailing information for CDFW is noted.
S3, Lines 372-388	The contact information for CDFW is noted.

Comment Letter S4

STATE OF CALIFORNIA—CALIFORNIA NATURAL RESOURCES AGENCY **GAVIN NEWSOM,** GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
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January 29, 2021

California Department of Water Resources
Division of Flood Management
Attn: Ms. Stephanie Ponce, Environmental Scientist
3310 El Camino Avenue, Room 140
Sacramento, CA 95821

Subject: Comments on the Tisdale Weir Rehabilitation and Fish Passage Project Draft Environmental Impact Report, SCH No. 2019049093

Dear Ms. Ponce,

The Central Valley Flood Protection Board (Board) appreciates the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the proposed Tisdale Weir Rehabilitation and Fish Passage Project (proposed project). The DEIR was prepared to disclose and address potential environmental impacts associated with the proposed project. The proposed project is located on the east side of the Sacramento River, approximately ten miles southeast of the town of Meridian and near the community of Grimes, in Sutter County, California. The primary objectives of the proposed project are to structurally rehabilitate the Tisdale Weir, and reduce fish stranding at the Tisdale Weir by improving fish passage through the weir to the Sacramento River. The Tisdale Weir and Bypass are critical components of the Sacramento River Flood Control Project (SRFCP), and the California Department of Water Resources (DWR) Division of Flood Management proposes to construct, operate and maintain the proposed project.

Responsibility of the Central Valley Flood Protection Board

The Board is the State's regulatory agency responsible for ensuring appropriate standards are met for the construction, maintenance, and operation of the flood control system that protects life, property, and habitat in California's Central Valley. The Board serves as the State coordinator between local flood management agencies and the

federal government, with the goal of providing the highest level of flood protection possible to California's Central Valley.

Per California Code of Regulations, Title 23, Waters, Division 1 (Title 23), Section 6, approval by the Board is required for all proposed work or uses, including the alteration of levees within any area for which there is an Adopted Plan of Flood Control within the Board's jurisdiction. In addition, Board approval is required for all proposed encroachments within a floodway, on adjacent levees, and within any Regulated Stream identified in Title 23, Table 8.1. This proposed project is located within the Board's permitting authority, thereby requiring an encroachment permit.

The Board operates under authorities as described in California Water Code (Water Code), which requires the Board to oversee future modifications or additions to facilities of the State Plan of Flood Control (SPFC). In addition, pursuant to assurances provided to the United States Army Corps of Engineers (USACE) by the Board on behalf of the State, the USACE Operation and Maintenance Manuals, Code of Federal Regulations, Title 33, § 208.10, and United States Code, Title 33, § 408, the Board is responsible for the operation and maintenance of the SPFC facilities. The USACE requires the Board to serve as the lead non- Federal sponsor for projects to improve or alter facilities of the SPFC pursuant to Code of Federal Regulations, Title 33, § 408. The State's objectives include fulfilling the USACE's expectations pursuant to the assurances provided to the USACE.

The Board, as a Responsible Agency under the California Environmental Quality Act (CEQA), will review and consider the environmental effects of the proposed project identified in the DEIR, and will reach its own conclusions on whether and how to approve the project involved (14 CCR 15096, subd. (a)). This includes direct impacts to facilities under construction, as well as indirect impacts from the proposed project to surrounding facilities. Accordingly, the comments herein are intended to assist in the development of a robust CEQA document capable of supporting the Board's permitting process. Board staff provides the following comments regarding potential environmental effects within the Board's jurisdiction.

Flood Analysis

Appendix I of the DEIR, "*Flood Hydrologic and Hydraulic System Analysis Technical Memorandum*" (ESA, 2019/Revised 2020), Section 3.4 states: "This hydrology is based on the synthetic event hydrology prepared for the Sacramento-San Joaquin Rivers Comprehensive Study, with some changes to flood routing through Folsom Dam (USACE, 2014)." The Sacramento-San Joaquin Rivers Comprehensive Study, prepared by the USACE in 2002, is not the most current hydrology model to be used for today's projects in the Central Valley. In 2015, the USACE developed the Central Valley Hydrology Study1 (CVHS) to support the assessment of the current Federal-State levee

protection system. The goal of the CVHS was to develop the required frequency curves, which provide estimates of the annual exceedance probability of flows in accordance with current standards of practice.

The California Governor's Water Resilience Portfolio (2020) and Governor's Executive Order N-10-19 requires "climate adaptability in California" by considering the impacts of climate change for future projects in California. Furthermore, in compliance with Water Code, § 8610.5(c), the Board shall consider, before taking any action, "The best available science that relates to the scientific issues presented by the executive officer, legal counsel, the department, or other parties that raise credible scientific issues."; and also shall consider the "Effects of reasonably projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed". Moreover, the Board adopted the 2012 Central Valley Flood Protection Plan (CVFPP) and 2017 CVFPP Update, which require proposed projects to be consistent with the adopted 2017 CVFPP Update, including climate change considerations.

The "*Flood Hydrologic and Hydraulic System Analysis Technical Memorandum*" (ESA, 2019/Revised 2020; Appendix I of the DEIR) summarizes modeling assumptions and data sources used to analyze the hydrologic and hydraulic system's performance to determine how the proposed project could change the performance of the State-Federal flood control system. The analysis accounted for the potential flooding risks by analyzing the potential change in water surface elevation during flood peaks without and with the proposed project. However, the analyses do not include future flows due to climate change considerations. Climate change does not seem to have been considered in the flood analyses presented in Appendix I (*Flood Hydrologic and Hydraulic System Analysis Technical Memorandum*) or Appendix C (*TUFLOW Model Results and CEQA Impacts Analysis*) of the DEIR.

> **Recommendation:** The hydrologic and hydraulic analyses should use the most current Central Valley Hydrology Study (2015), and incorporate future flows due to climate change considerations in compliance with the Governor's Water Resilience Portfolio (2020), Governor's Executive Order N-10-19, Water Code § 8610.5 (c), and the Board's adopted Central Valley Flood Protection Plan (2012 and 2017 Update).

Page 3.4-56 of the DEIR states, "Flow conditions in the Sacramento River downstream of Tisdale Weir are expected to be similar to existing conditions (i.e., to change by 5 percent or less)." Page 3.7-23 of the DEIR states, "Flows in the river downstream of Tisdale Weir are expected to be similar to existing conditions (i.e., to change by 2.2 percent or less)."

> **Recommendation:** Clarify/confirm the percent change of expected flow conditions downstream of the Tisdale Weir.

Potential Impacts to SPFC Operations and Maintenance

The Board is an independent State agency that is required to enforce the construction, maintenance and protection of the levees, embankments and channel rectification that will, in the Board's judgment, best serve the interests of the State. In accordance with Water Code § 8608, the Board is charged with establishing and enforcing standards for the maintenance and operation of levees, channels, and other flood control works of an authorized project or an adopted plan, including but not limited to standards for encroachment construction, vegetation and erosion control measures. The Board also has all the responsibilities and authorities necessary to oversee future modifications of the SPFC and tributaries and distributaries of the Sacramento River, the San Joaquin River, and designated floodways pursuant to assurances provided to the USACE and the USACE Operation and Maintenance Manuals under Code of Federal Regulations, Title 33, § 208.10 and United States Code, Title 33, § 408.

Under authorities granted by Water Code and Public Resources Code statutes, the Board enforces Title 23 for the construction, maintenance, and protection of adopted plans of flood control, including the Federal-State facilities of the SPFC, regulated streams, and designated floodways. Therefore, any activity that encroaches on the Tisdale Weir and Bypass shall not adversely impact flood system integrity or operations and maintenance.

Page 3.7-20 of the DEIR states: “The development of sediment conditions, particularly in years with few and/or relatively brief overtopping events, would be monitored and addressed as outlined in the Tisdale Weir Operations, Maintenance, and Long-Term Management Plan being developed for the Proposed Project.”

> **Recommendation:** The Board will require a Long-Term Management Plan be submitted as part of its encroachment permitting process. This plan should include information regarding how the proposed project area will be managed and maintained by DWR in perpetuity, once the proposed project is deemed complete. Please submit a copy of the Tisdale Weir Operations, Maintenance, and Long-Term Management Plan to the Board with the proposed project’s encroachment permit application materials, or once the Plan is completed.

Appendix H of the DEIR, “*Sediment Budget Analysis Technical Memorandum*” (ESA, 2019) summarizes the estimated annual suspended sediment budget for the Tisdale Bypass for both existing and proposed project conditions. Page 20 of the “*Sediment Budget Analysis Technical Memorandum”* (Appendix H of the DEIR) states, “…the proposed Project may increase the suspended sediment volume delivered to the Tisdale Bypass and areas downstream by approximately 8 percent, and it may increase the net volume of sediment deposited within the Tisdale Bypass by up to approximately 9 percent (assuming the eroded volume would not change).” However, the calculated

sediment deposition in the Tisdale Bypass under the proposed project conditions could be underestimated as a result of future climate change flows not being considered, which may consequently increase operation and maintenance.

> **Recommendation:** As previously recommended, the hydrologic and hydraulic analyses should use the most current Central Valley Hydrology Study (2015), and incorporate future flows due to climate change considerations in compliance with the Governor's Water Resilience Portfolio (2020), Governor's Executive Order N-10-19, Water Code § 8610.5 (c), and the Board's adopted Central Valley Flood Protection Plan (2012 and 2017 Update).

Page 3.4-6 of the DEIR states that riparian forest is present along the northern and southern margins of the Tisdale Bypass. Page 3.4-58 of the DEIR states that construction work for the proposed project may affect riparian forest, and based on preliminary drawings, up to 1 acre of vegetation may be removed from within the riparian forest. Mitigation Measure 3.4-12b on page 3.4-59 states, "Compensatory mitigation may include the purchase of credits from an approved off-site bank or on-site tree plantings." The Board is concerned about where trees and/or vegetation will be placed, what species will be planted, and the hydraulics and the ability to direct flows towards the levees of the bypass or other flood control structures. Title 23, § 131 provides the regulatory requirements for maintenance, planting, and removal of vegetation.

> **Recommendation:** Refer to Title 23, § 131 regarding the regulatory requirements for maintenance, planting, and removal of vegetation (including trees). If on-site restoration is required, please submit any planting plans and vegetation maintenance schedules that have been developed with the proposed project's encroachment permit application materials.

Board staff is available to discuss any questions you have regarding the above comments. Please contact Jennifer Stewart via email at Jennifer.Stewart@CVFlood.ca.gov.

Sincerely,

Andrea Buckley

Andrea Buckley, Chief
Environmental Services and Land Management Branch

ec: Office of Planning and Research
state.clearinghouse@opr.ca.gov

Letter S4 Response	Central Valley Flood Protection Board, Andrea Buckley, Chief, Environmental Services and Land Management Branch January 29, 2021

S4, Lines 11-57 DWR thanks the Central Valley Flood Protection Board for its comments as a responsible agency pursuant to CEQA. The comment describes the Central Valley Flood Protection Board's regulatory responsibility to ensure that appropriate standards are met for construction, maintenance, and operation of the Central Valley's flood control system, and the Central Valley Flood Protection Board's permitting authority. As presented in DEIR Section 2.4, *Anticipated Regulatory Permits and Approvals* (page 2-25), anticipated regulatory approvals include a California Code of Regulations Title 23 encroachment permit from the Central Valley Flood Protection Board and a Rivers and Harbors Act Section 408 permission from USACE, as described in the comment.

S4, Lines 58-69 Although the hydrology data generated by USACE's Central Valley Hydrology Study were completed more recently and are being widely adopted for use in flood studies in the Central Valley, they provide somewhat less conservative estimates of flow deliveries in some locations in the system than the hydrology in USACE's Comprehensive Study data set that was used for the Proposed Project. For example, DWR's 2017 Sacramento River Basin-Wide Feasibility Study, which used the Central Valley Hydrology Study as the event-based hydrology, assumed the 1 percent Annual Chance Exceedance (ACE) peak flow for the Sacramento River below Colusa Weir (the upstream boundary of the current study area) was approximately 49,200 cfs. The 2002 USACE Comprehensive Study flow for the same 1 percent ACE event at this location was 55,500 cfs; the DEIR used this more conservative estimate of flood flow deliveries at the latitude of Tisdale Weir.

Additionally, the notch is proposed to be closed during higher flood discharge levels (at or above Sacramento River discharges exceeding 48,000 cfs—the 10-year design flow), and therefore, the flow split between the Sacramento River and Tisdale Bypass will remain unchanged, regardless of which event-based hydrology is used for analysis. In the event of catastrophic equipment failure, the gate could potentially remain open during a flood. To better understand the consequences of this scenario, the DEIR investigated the effects of the gate remaining in the open position across a full range of hydraulic loadings.

S4, Lines 70-86 Chapter 4, *Climate Change and Resiliency*, is included in the FEIR to address the impact of the Proposed Project on climate change, how the Proposed Project would be affected by climate change, and how the Proposed Project would affect the study area's resiliency and adaptability to climate change.

The commenter is correct that the analysis of the hydrologic and hydraulic system presented in DEIR Appendix I assesses potential flood risks by analyzing the potential change in water surface elevation during flood peaks with and without the Proposed Project.

S4, Lines 86-91 Impact 3.7-5 in DEIR Chapter 3.7, *Hydrology* (based primarily on the analysis presented in Appendix I, *Flood Hydrologic and Hydraulic System Analysis Technical Memorandum*) concluded that operation of the Proposed Project would have a negligible effect on the hydraulic performance of the State-federal flood control system. Based on the information available, there is nothing to suggest that climate change would exacerbate any distinct, potential flood-related effects unique to the Proposed Project.

The DEIR analysis of agricultural resources (DEIR Section 3.2, *Agricultural Resources*) and recreation (DEIR Section 3.8, *Recreation*), based primarily on the analysis presented in Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, concluded that the Proposed Project would not have a significant impact on agricultural resources or recreation due to increased flows to the Tisdale Bypass. Similar to that stated above, based on the information available, there is nothing to suggest that climate change would exacerbate any distinct, potential flow-related effects unique to the Proposed Project.

For further discussion, Chapter 4, *Climate Change and Resiliency*, is included in the FEIR to address the impact of the Proposed Project on climate change, how the Proposed Project would be affected by climate change, and how the Proposed Project would affect the study area's resiliency and adaptability to climate change.

S4, Lines 92-97 As stated in Response S4-2, USACE's Central Valley Hydrology Study provides somewhat less conservative estimates of flow deliveries in some locations in the system than the hydrology in USACE's Comprehensive Study data set that was used for the Proposed Project.

Regardless of which event-based design flow or climate scenario is used, or even if climate change is integrated into the flow at all, when investigating impacts of the Proposed Project, it is merely the *difference* in predicted

peak stage and peak flow (existing conditions compared to Proposed Project conditions) that is important to focus upon. Thus, it is entirely reasonable to rely on the differences in modeled results between one or more scenarios to evaluate the potential impact of the Proposed Project. After evaluating a full range of hydraulic loadings for the DEIR analysis (50 percent ACE through 0.2 percent ACE), it was determined that the changes in flow and stage are negligible across a broad range of hydraulic loading scenarios. Impacts on the performance of the overall system would be negligible, even if the gate equipment were to malfunction and the notch were to remain open during flood operations.

As stated in Response S4-4, Impact 3.7-5 in DEIR Chapter 3.7, *Hydrology* (based primarily on the analysis presented in Appendix I, *Flood Hydrologic and Hydraulic System Analysis Technical Memorandum*), concluded that Project implementation would have a negligible effect on the hydraulic performance of the State-federal flood control system. Based on the information available, there is nothing to suggest that climate change would exacerbate any distinct, potential flood-related effects unique to the Proposed Project.

For further discussion, Chapter 4, *Climate Change and Resiliency*, is included in the FEIR to address the impact of the Proposed Project on climate change, how the Proposed Project would be affected by climate change, and how the Proposed Project would affect the study area's resiliency and adaptability to climate change.

S4, Lines 98-104

Both statements in the comment are in referenced to the values summarized in DEIR Table 3.4-10, page 3.4-57, which shows that flows in the Sacramento River downstream of Tisdale Weir are expected to change by 2.2 percent or less. The first statement referenced by the commenter (that flow conditions in the Sacramento River downstream of Tisdale Weir would change by 5 percent or less) was summarizing this change more broadly; this statement will be revised on DEIR page 3.4-57 to be more specific.

S4, Lines 105-123

The comment describes the Central Valley Flood Protection Board's regulatory responsibility to ensure that appropriate standards are met for maintenance and operation of levees, channels, and other flood control works of an authorized project or an adopted plan, and the Central Valley Flood Protection Board's authority to enforce California Code of Regulations Title 23.

The Proposed Project has been designed to protect the integrity of the Tisdale Weir and Bypass, and as stated in DEIR Section 3.7, *Hydrology*, would not affect the operation of the Sacramento River Flood Control Project facilities or increase the risk of flooding. Additionally, as noted in DEIR Chapter 2, *Project Description*, the Proposed Project would support DWR in meeting its responsibilities under California Water Code Section 8361 to operate and maintain the Sacramento River Flood Control Project by extending the useful life of Tisdale Weir.

S4, Lines 124-134

As noted in the DEIR and comment, DWR is developing a Long-Term Management Plan for the Proposed Project. DWR will submit a copy of the plan to the Central Valley Flood Protection Board with the encroachment permit application materials, or once the plan is complete.

S4, Lines 135-151

Impact 3.7-3 in DEIR Chapter 3.7, *Hydrology* (based primarily on the analysis presented in Appendix H, *Sediment Budget Analysis Technical Memorandum*), concluded that the Proposed Project would not have a significant impact on the sediment supply to the Tisdale Bypass and areas downstream. The potential changes in sediment supply to the Tisdale Bypass under climate change conditions are not well understood based on available information. Further, potential climate change–induced variations in the sediment supply to the Tisdale Bypass would occur regardless of the Proposed Project (i.e., the majority of the sediment supply occurs during weir spill events). Based on the information available, there is nothing to suggest that climate change would exacerbate any distinct, potential sediment-related effects unique to the Proposed Project.

For further discussion, Chapter 4, *Climate Change and Resiliency*, is included in the FEIR to address the impact of the Proposed Project on climate change, how the Proposed Project would be affected by climate change, and how the Proposed Project would affect the study area's resiliency and adaptability to climate change.

S4, Lines 152-166

Mitigation Measure 3.4-12b was written with the expectation that mitigation for loss of riparian vegetation from the Proposed Project would occur on-site. The on-site vegetation planting approach is to maximize the compensation for any localized, temporal loss of riparian forest stemming from vegetation removal necessary during construction. Nevertheless, as also stated in the same mitigation measure, mitigation options also being considered by DWR include credits from an approved off-site bank (e.g., advanced mitigation at the Colusa Sacramento River Recreation Area).

Therefore, potentially all mitigation for loss of riparian vegetation under the Proposed Project may ultimately occur at an off-site location.

The Proposed Project has been designed to protect the integrity of the Tisdale Weir and Bypass, and as stated in DEIR Section 3.7, *Hydrology*, would not affect the operation of the Sacramento River Flood Control Project facilities or increase the risk of flooding.

It is recognized that any on-site planting of woody vegetation should be placed in a manner that does not adversely affect hydraulics within the Sacramento River of Tisdale Bypass or the functionality of system to direct flood flows into the flood bypass system. As described in DEIR Chapter 4, *Project Description*, DWR is expecting to obtain a Flood Encroachment Permit from the Central Valley Flood Protection Board, pursuant to California Code of Regulations Title 23. Therefore, DWR will be required to submit a detailed analysis for impacts the Proposed Project would have on flood conveyance, including the implications of any vegetation that DWR plants on-site. The DEIR language in Mitigation Measure 3.4-12b was amended to explain that if on-site restoration (e.g., siting of any woody vegetation planted pursuant to compensatory mitigation loss for riparian vegetation) is required, DWR will submit the mitigation plan to the Central Valley Flood Protection Board for review with the encroachment permit application to ensure that the plantings do not have an adverse effect on upstream or downstream flood risk.

S4, Lines 167-169

The contact information for the Central Valley Flood Protection Board is noted.

Comment Letter L1

SUTTER COUNTY
DEVELOPMENT SERVICES DEPARTMENT

Building Inspection | Engineering/Water Resources | Planning
Code Enforcement | Environmental Health | Road Maintenance

January 15, 2021

Tisdale Weir Rehabilitation Project EIR Comments

Sutter County appreciates the opportunity to review and comment on the project EIR. Having reviewed the document, its scope of work and proposed mitigations, we encourage the selection of the Proposed Project as described in Section 2.3 due to its ability to meet the Project Objectives.

We greatly appreciate the consideration of the existing Sutter County 2030 General Plan, with all of its goals and policies to protect high-quality agricultural land, that is used as a basis of mitigation throughout the document. Additionally, the Proposed Project maintains access to the prized Tisdale Boat Launching Facility and will not have a significant impact upon debris accumulation at the Tisdale Weir.

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www.suttercounty.org

Letter L1 Response **Sutter County Development Services**
January 15, 2021

L1, Lines 3-11 The comment supports the selection of the Proposed Project, and the consideration given to protecting high-quality agricultural land in Sutter County and access to the existing Tisdale Boat Launching Facility. The comments are noted.

Comment Letter L2

From:	Nick Ramos
To:	DWR Tisdale Weir RehabProject
Cc:	Nick Ramos
Subject:	Comments on Draft EIR for Tisdale Weir Rehabilitation and Fish Passage Project
Date:	Tuesday, January 19, 2021 8:18:04 AM
Attachments:	Image001.png

Hi,

Thank you for accepting comments.

- The primary function for the public is the Tisdale Boat Launch.
    - Boat launch is dangerous due to relatively high velocity water. Relocation or creating area of slower moving water may be best.
    - Boat launch location also interrupts waters path and causes soil erosion and soil deposit issues.

Eduardo Nick Ramos, PE, CFM
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https://www.suttercounty.org/doc/government/depts/ds/dshome

Letter L2 Response **Sutter County Development Services**
January 15, 2021

L2, Lines 3-5 The comment is noted. The Proposed Project is not expected to affect hydraulics at the boat ramp during conditions when the parking lot and boat ramp would be used.

L2, Lines 6-7 The comment is noted. No changes are proposed for the boat ramp as part of the Proposed Project; the ramp would be left in place.

Comment Letter O1

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February 1, 2020

Via Electronic Mail Only

Director Karla Nemeth
California Department of Water Resources
1416 Ninth Street
P.O. Box 942836
Sacramento, CA 94236-0001
Karla.nemeth@water.ca.gov

California Department of Water Resources
Division of Flood Management
Attn: Stephanie Ponce, Environmental Scientist
3310 El Camino Avenue, Room 140
Sacramento, CA 95821
TisdaleWeirRehabProject@water.ca.gov

Re: Comments on Tisdale Weir Rehabilitation and Fish Passage Project Draft Environmental Impact Report (State Clearinghouse No. 2109049093) and Request for CEQA Notice

Dear Director Nemeth and Ms. Ponce:

The following comments on the draft environmental impact report (DEIR) for the Department of Water Resources' (DWR) proposed Tisdale Weir Rehabilitation and Fish Passage Project (Project) are submitted on behalf of the Sutter Bypass-Butte Slough Water Users' Association and its members with parcels located within the Sutter Bypass that may be impacted by the Project (collectively, "Association").[2]

The Association is an unincorporated nonprofit voluntary association of landowners in proximity to the Sutter Bypass. The Association members hold common purposes to confirm, preserve and administer their respective water rights, to exchange educational and informational items related to the Sutter Bypass area, to conduct technical studies of common interest, and to cooperate with other nearby governmental entities and non-governmental organizations. Association members own property within, or immediately adjacent to, the Sutter Bypass downstream of the Tisdale Weir comprising over 5,000 acres of active farmland, open space, and wildlife habitat along the Sacramento River in Sutter County. The productive farmlands within the Sutter Bypass play an important role in the local economy as a steady source of revenue and labor. They also support recreational uses, including numerous duck clubs.

[2] All of the Sutter Bypass-Butte Slough Water Users' Association members are identified in Attachment A tothis letter.

During wet years, water from the Sacramento River historically has been diverted through the Tisdale Weir and into the Sutter Bypass for a few weeks a year. In comments on the Notice of Preparation (NOP) for the DEIR, the Association requested that the DEIR assess potential impacts within the Tisdale and Sutter Bypasses and the Sacramento River that may be caused by proposed changes in the flow regime (e.g., erosion, siltation, vegetation management practices, farming operations, and access to, from, and through the bypass system). Regrettably, the DEIR provides only general information regarding effects in the Sutter Bypass and does not provide sufficient information for the Association members to understand the full scope of Project impacts or address their substantial concerns.

The DEIR identifies that the Project will temporarily affect approximately 10 percent of Sutter Bypass farmlands by increasing periods of inundation. The DEIR characterizes this as a "relatively small predicted change" and concludes there would be no significant impact under the California Environmental Quality Act (CEQA) because there is "no evidence" this change would cause these fields to be permanently taken out of production or otherwise converted to nonagricultural uses as compared to existing conditions. (DEIR, p. 3.2-15.) The Association disagrees with DWR's characterization of an increase in inundation over 10 percent of Sutter Bypass farmlands as "relatively small," especially as the maximum number of consecutive fallowing events are predicted to double for some properties. Moreover, the DEIR does not provide enough information to allow the Association members to understand the extent of impacts to their agricultural resources and operations, or recreational uses (including duck clubs). In particular, the DEIR does not provide evidence or analysis regarding the frequency, extent, and duration of inundation (specifically, Project effects on stage/water levels downstream of the Tisdale Bypass) and sedimentation within the Sutter Bypass sufficient for landowners to understand the Project's impact to agriculture and recreation. As discussed below, substantial increases in the frequency, extent, and duration of inundation, or related sedimentation, may lead to economic and operational impacts, agricultural land conversion, and recreation impacts. Any increase in adverse effects would exceed the scope of the existing flood easement and would require landowner compensation. Failure to adequately resolve these issues will compromise future cooperative efforts between DWR and Sutter Bypass stakeholders regarding use of the Bypass.

I. The DEIR's Impact Assessment Methodology and Assumptions Are Inadequate and Unsupported, and Insufficient Information Has Been Provided to Landowners to Permit Meaningful Evaluation of Project Impacts

A. The DEIR's Use of Long-Term Average Data, and General Conclusions about Impacts within the Sutter Bypass as a Whole, Obscures the Nature and Extent of Project Impacts

In several respects the methodology used to assess Project impacts from inundation and sedimentation is inadequate to sufficiently inform decisionmakers and the public regarding the

Project's impacts. The DEIR assesses impacts related to agricultural land fallowing based on an average of modeled effects over a 12-year (or 22-year - the DEIR contains conflicting statements about this)[3] simulation period that includes a variety of water year types (e.g., critical, dry, normal, wet), and compares predicted Project changes to the average number of fallowing events over the same time period. This methodology (use of long-term averaged impacts) does not accurately represent or portray potential Project effects relevant to landowners. In order for landowners to understand impacts to agricultural use, the DEIR must disaggregate potential fallowing effects and present them in different water year types. This is important because in very dry or critical years, like 2014-2015, water rights were curtailed. Fallowing that occurred in those years was not due to a farming decision; it occurred because surface water diversions were not allowed. Also, in very wet years, like 2017, the Sutter Bypass was flooded very late in the year, and fallowing was not a farming decision. Similarly, data regarding Project effects on water levels must be presented as changes by water year type, so that more extreme water level changes in individual years that would adversely affect the ability to maintain water levels for recreational use (duck hunting) are not obscured.

B. Impacts May Vary Based on Location within the Sutter Bypass; Property-Specific Analyses Are Needed to Understand the Nature and Extent of Project Impacts

According to DWR staff, the DEIR model is capable of calculating this information. This information is necessary to understand Project impacts. The Association requests that DWR provide information on Project-related water level changes, last wet day, and sediment loading, by water year type, for each parcel in the Sutter Bypass.

C. Model Inputs Must Reflect Current Conditions

The DEIR acknowledges that field leveling for agricultural operations can affect drainage patterns. (Appen. C, p. 6.) As described in the DEIR (§ 2.2.3), the topographic data used for development of the TUFLOW hydraulic model is based on a variety of data sources but mainly based on LiDAR data collected by DWR in 2008. In 2020, DWR removed approximately 400,000 cubic yards of sediment as part of the Tisdale Bypass Sediment Removal Project. The removal of sediment could significantly change the ground elevation and could be different than the elevations used in the TUFLOW model. The hydraulic model and DEIR impact analysis should be updated and revised to account for topographic conditions in the Tisdale Bypass as of 2020.

[3] The DEIR at various places references use of data for both water years and CropScape (fallowing) from the period from 2007-2018 and refers to a 12-year fallowing analysis period. (See, e.g., appen. C, p. 27, § 3.3.) However, the DEIR also references a "22-year simulation period." (See, e.g., appen. C, p. 24, § 3.2.) It is unclear whether the fallowing analysis relies on information solely from 2007-2018 or considers Project-related fallowing compared to a longer (22-year) baseline.

D. More Information About TUFLOW Model Results Is Needed to Understand the DEIR Impact Analysis

The DEIR impact analysis relies on development and calibration of a TUFLOW hydraulic model to simulate historic flows from 1997 to 2018 to understand and quantify any downstream changes in inundation. DEIR section 2.2.8 documents and discusses the model calibration and validation in a qualitative manner. To better understand how the TUFLOW model is calibrated and verified, plots of computed stages, computed flows versus observed stages and observed flows, flow split calculations, computed max water surface elevation versus high water marks, and computed inundation versus remotely sensed areas of inundation should be documented and included in the DEIR. This information will help affected landowners better understand the accuracy of predicted water surface elevations, depth of flooding, and duration of flooding on their respective parcels.

E. DWR Must Make its Project Effects "Dashboard" Tool Available to Landowners

Landowners met with DWR representatives about the Project and DEIR on January 11, 2021. In that video conference, DWR disclosed that it has a modeling "dashboard" tool that is capable of calculating the Project's effect on water levels, inundation, and sedimentation by water year and by individual parcel. DWR characterized the dashboard as being relevant to future unspecified "potential future real estate process with downstream landowners." Landowners requested access to the dashboard to facilitate their understanding of the Project and its impacts, and for purposes of evaluating the DEIR and preparing comments; DWR denied their request for this information, stating that it may provide the information after the CEQA process has concluded. DWR later offered to hold an additional video conference last week, during which it would present more specific information from the dashboard tool. However, the offer was not made with sufficient time for landowners to meet before the DEIR comment deadline. The information the dashboard appears capable of producing is essential to the landowners' understanding of Project impacts, and is clearly part of the administrative record for the Project CEQA process. The Association objects to DWR's refusal to make this relevant data and tool available to them in a timeframe that would have enabled them to consider it in reviewing and commenting on the DEIR within the public comment period; the Association may submit additional comments on the DEIR, should DWR make the dashboard tool available to the public.

F. The DEIR Does Not Contain Sufficient Information to Support its Reliance on the Tisdale Bypass "Hinge"

The DEIR (p. 2-22, fn. 3) recognizes the essential role of an existing ridge (referred to as the "hinge") in the Tisdale Bypass in preventing flows from moving downstream into the Sutter Bypass. The analysis of downstream water stage and sedimentation impacts relies on the existence of this hinge point at an elevation of 37 feet; the maintenance of the hinge at the modeled elevation is thus essential to limiting Project impacts. The Project's increased flows in

the Tisdale Bypass would appear to have the potential to affect the hinge through increased scour or erosion. Yet, the DEIR does not evaluate this. (See DEIR, p. 3.7-11 ["The potential influence of the Proposed Project on erosion or resuspension of sediment in the [Tisdale] bypass was not assessed."].) If the hinge level decreases due to scour, more water will flow downstream into the Sutter Bypass, resulting in more severe impacts than disclosed in the DEIR.

Footnote 3 also states that the "hinge point" has built up and persisted in the Tisdale Bypass, likely because of both natural sediment deposition in the bypass and the influence of the Sutter Bypass backwater from downstream." The "natural" sediment deposits are from the historic operation of the Tisdale Weir. Has DWR analyzed whether the change in hydraulics through the proposed notch could change the deposition of the sediments and therefore, the hinge point? In the January 11, 2021 video conference, DWR staff stated the DEIR assumes that the hinge point will be a "self-maintaining feature." What evidence supports this assumption? What provisions does DWR have to monitor the hinge condition and elevation to ensure that it does not erode and thus increase flooding downstream compared to existing conditions or greater than predicted in the DEIR? At a minimum the Project description should be revised to include a commitment to regularly monitor and maintain the hinge at the current elevation.

II. The DEIR Does Not Adequately Evaluate and Mitigate Potentially Significant Impacts to Sutter Bypass Agriculture and Recreation from Increased Flooding

A. The DEIR Does Not Provide Sufficient Information About Project Effects on Water Levels

The DEIR analyzes how increases in flow as a result of the Project could increase the extent and/or duration of inundation with respect to the number of additional "wet days." The DEIR limits its analysis to whether such increases in wet days may result in long term conversion of the land use, compared to historic fallowing events for agriculture, or impacts to recreation by considering access to duck clubs.

Impacts to agriculture and waterfowl recreation are dependent on frequency of flooding, depth of flooding, and duration of flooding. The Project would increase flows in the Tisdale and Sutter Bypasses when the gate is open and the stage in the Sacramento River is between elevation 37 and 44 feet NAVD88. The DEIR does not describe the additional flow, increased frequency, and effect on water levels in the Sutter Bypass under the Project when the proposed notch is open.

In order to accurately and adequately depict impacts to agriculture and recreation, and address landowner concerns, the DEIR must be revised to analyze and disclose the following Project-related effects in the Sutter Bypass: (1) change in the amount of flow in the Sutter Bypass downstream of the Tisdale Weir (in cubic feet per second); (2) the change in frequency of flooding; (3) the change in depth of flooding; and (4) the change in duration of inundation for each affected parcel and field downstream of the Tisdale Weir.

Water level information is essential to understand impacts to duck clubs. Relying on the long-term average modeled increase in "wet days" during waterfowl season, the DEIR concludes that the Project will result in a small predicted increase in number of wet days such that "suitability of habitat conditions for waterfowl in Sutter Bypass is expected to be largely unaffected." (DEIR, p. 3.4-66.) In assessing impacts to recreation (and particularly duck clubs), the DEIR considers only whether the predicted change in "wet days" would reduce access to wildlife areas so as to "cause an incremental increase in the use of other nearby wildlife areas and the resulting use of existing facilities were to increase such that substantial physical deterioration of the facility would occur or be accelerated." These constrained characterizations of impacts ignore several aspects of potential impacts. Changes in water levels can alter the habitat suitability for migratory waterfowl that utilize the Sutter Bypass, as different species of waterfowl prefer different water levels and water depth influences which species will utilize a particular area. For most duck clubs, the ideal water depth is 18 inches (some clubs maintain even lower water levels) and property owners strive to maintain water at this level during waterfowl season. Increases in water levels may adversely impact waterfowl hunting opportunities due to reductions in availability of shallow-flooded wetlands during the hunting season. This will impact private hunting clubs economically and may disincentivize such clubs from managing shallow-flooded wetlands. If Project-related increases in water levels impair the ability to maintain appropriate water levels for waterfowl, impacts will be adverse and potentially significant.

As noted in the comments of the Creps Farm LLC, the Project has the potential to adversely affect at least one potentially significant historic resource, the Sutter Basin Duck Club. The DEIR fails to address that aspect of the Project's potential impacts. In order for landowners and the public to understand the potential impacts to duck clubs, the DEIR must analyze and present information on specific water level changes, by water year type, at individual duck club properties.

B. The DEIR Fails to Adequately Disclose or Mitigate Significant Sediment and Debris Impacts in the Sutter Bypass

Existing operations of the Tisdale Weir result in sediment accumulation on properties in the Sutter Bypass. Project operations will substantially increase the amount of sediment deposited on downstream fields. The DEIR's sediment flux analysis showed that there would be an increase in the amount of suspended sediment that would be delivered to, as well as deposited within, the Sutter Bypass. According to the DEIR, the annual suspended sediment budget would increase by 8-9 percent; the analysis concludes that sediment would need to be periodically removed as part of the continued and ongoing maintenance implemented by DWR. However, the sediment flux analysis and DEIR only analyzed impacts within the Tisdale Bypass. The DEIR identifies that the Project will increase the volume of suspended sediment downstream of the Tisdale Bypass by at least 8 percent. (See DEIR, p. 3.7-17.) However, the DEIR does not indicate whether this is an average value or what the maximum extent of sediment deposition would be in any given year. If

the number is an average value, impacts to water quality and agriculture in individual years could be much more substantial.

Landowners at the confluence of the Tisdale Bypass and Sutter Bypass have historically experienced heavy sediment deposition, as well as debris, associated with existing weir operations. This sediment accumulation has caused an increase in labor and equipment time and cost to clear and in some years has prevented planting from occurring. For example, in 2008, the Creps Farm, which has been farmed for rice continuously since 1940, was inundated with thousands of cubic yards of silt from existing weir operations (based on survey elevations provided by the Sutter County Assessor's office and Creps Farm operators' observations), requiring up to 200 acres of the property to be releveled and regraded before fields could be planted, at significant cost to the landowner. In 2020, there was excess silt on about 75 acres of Creps Farm fields, which prevented the planting of approximately 15 acres. When DWR has removed debris from the Tisdale Bypass, it has dumped the debris in large piles at the end of the bypass adjacent to the Creps Farm, causing impacts to the landowner when flows wash the debris onto their property. Increased sedimentation, debris, and additional water from Project operations also has the potential to reduce channel capacity in the West Borrow Canal, which has implications for draining the fields and increased flooding; this does not appear to have been evaluated in the DEIR.

In the past, DWR's response to sediment and debris impacts has been inconsistent and inadequate, raising concerns about unmitigated Project impacts to agricultural operations and associated facilities, including drainage canals, under the Project. Based on landowner experience, the Project has the potential to result in significant impacts, and also contribute considerably to significant cumulative impacts, from sediment and debris in the Sutter Bypass. Thus, it is of significant concern to the Association that the DEIR does not evaluate the impact of this increased sediment deposition on agricultural operations, including identifying which properties will experience increased sediment deposition or the maximum amount that will be deposited in any given year. This information is necessary for landowners to understand the Project's impacts to their agricultural operations, and whether and to what extent the Project will increase the burden of the existing flood easement on their property beyond historic conditions.

Although the DEIR predicts a substantial increase in sediment deposition in the Sutter Bypass, and additional debris is also likely, sediment and debris removal under the Project is proposed only for areas within the Tisdale Bypass. (DEIR, pp. 2-22 - 2-25.) This is insufficient to prevent significant Project-specific and cumulative adverse impacts to agricultural and duck club operations in the Sutter Bypass, especially since the DEIR's conclusion that impacts in the Tisdale Bypass would not be significant assumes there will be annual sediment and debris removal there. (See DEIR, p. 3.7-21.) At a minimum, the DEIR and Project description must be revised to include a commitment to a sediment and debris transport, monitoring, and response program for the Sutter Bypass, developed in consultation with landowners. Sediment and debris must be removed, without impacts to property or agricultural operations, or a mitigation fund established

to reimburse landowners for expenses associated with sediment and debris removal. This program must also mitigate downstream effects of sediment removal in the Tisdale Bypass.

Water quality is also a concern. The DEIR illogically concludes, without evidence or explanation, that the Project's increased sediment deposition will not have a significant impact on water quality: "Because the Proposed Project is expected to increase the volume of suspended sediment delivered to the Tisdale Bypass by 8 percent, it would not substantially increase the amount of suspended sediment in the bypass. Therefore, operation of the Proposed Project would have a less-than significant impact on water quality as a result of the release of sediment." (DEIR, p. 3.7-17.) The water quality analysis must be revised to clearly explain the basis for its conclusions, with reference to the specific evidence supporting the impact determination.

C. Project-Related Inundation and Sediment Impacts May Lead to Agricultural Land Conversion and Significant Economic Impacts

Increased inundation from the Project facilities would impact agricultural production on lands within the Sutter Bypass. Impacts could occur from delayed planting, as changes in the seasonal timing of inundation of the Sutter Bypass could affect the cultivation of crops, particularly rice. This, in turn, could have adverse economic effects for Association members and also for the local economy. Depending on the extent of flooding, increased inundation could convert portions of existing farmland to a nonagricultural use. For example, if Project- related inundation forces additional fallowing years, landowners could lose access to crop insurance. If flooding results in a broader area of inundation, a larger portion of Sutter Bypass lands would need to be leveled periodically, at a cost of $200 to $300 per acre. If farming becomes economically unviable, land may be converted to habitat. Changes in inundation patterns also could lead to crop conversion, with associated economic impacts. Rice production is the highest value use of Sutter Bypass farmland.

Project-related inundation that reduces crop yields, or forces conversion to later season crops, also will have adverse economic impacts that could lead to land being taken out of production. In addition to reduced revenue, extended inundation poses the risk to Sutter Bypass farms of increases to bank loan rates and inability to acquire production loans altogether, due to increases in production risks resulting from changes in flooding frequency and duration. Farmers within the Sutter Bypass also may experience greater difficulty in obtaining crop insurance as flooding on the land increases, and they may be subject to higher insurance premiums. All of these reasonably foreseeable economic impacts have the potential to threaten the sustainability of agriculture in the Sutter Bypass.

Reductions in crop yields are a driving factor in agricultural revenue losses due to flooding in the Sutter Bypass. Inundation during the months when the land is being prepared for planting and during the growing season can result in significant losses to crop yield. The months of March, April, and May are critically important in the rice farming season, as this is the time in which

preparation and planting of the field begins. It takes at least 45 days to drain the land from the last day of inundation. An additional 7-14 days are needed to allow for groundwork. The ideal planting time is May 5 through May 15, and each planting date after May 15 increases the potential for a yield loss and a later harvest date. If Project operations increase the extent or duration of inundation from historical patterns into March, planting could not begin until June. Based on Association members' experience farming rice, a delay in planting into June could lower crop yields significantly, by 10 to 20 percent, which would result in a gross reduction of income for Sutter Bypass farmers equal to hundreds of dollars per acre, along with reduced revenue to Sutter County and the local economy.[4]

More frequent flooding also has the potential to adversely affect essential farming infrastructure, including drainage culverts and ditches. Drainage culvert capacity may need to be increased, and general ditch maintenance, including sediment deposition removal, will need to occur more frequently. The DEIR fails to address these issues.

While the Association and its members recognize the benefits for fish associated with improved passage over the Tisdale Weir, DWR cannot ignore or minimize the Project's impacts to landowners, agriculture, and recreation. DWR must ensure that the Project does not result in unintended significant adverse impacts to agricultural and recreational resources, or a significant negative economic impact to Sutter Bypass farmers or Sutter County.

III. Project Impacts Will Increase the Burden of the Existing Flood Easement on Landowners and Will Require Adequate Compensation

As noted in the Association's comments on the NOP, the Sacramento-San Joaquin Drainage District holds a flowage easement on lands within the Sutter Bypass for flood control purposes. Additional flows under the Project will have significant economic impacts to landowners from increased sediment and debris removal costs, increased electric costs (from increased pumping to remove water from fields), reduced agricultural yields, potential loss of crop insurance, and potential conversion to lower value crops or habitat (if these effects make farming no longer economically viable). Each of these impacts has the potential to result in economic impacts to local agencies through reduced employment and tax revenue, as well as significant environmental

[4] A 2013 report written jointly by representatives of the University of California, Davis, Yolo County, and Douglas Environmental, quantified agricultural impacts of flooding in the Yolo Bypass under a variety of possible flooding scenarios in order to evaluate future projects connected to the Bay Delta Conservation Plan. (Howitt et al., Agricultural and Economic Impacts of Yolo Bypass Fish Habitat Proposals (Apr. 2013), p. 1.) The study was based on a comprehensive economic, agronomic, and geo-referenced dataset of agricultural production in the Yolo Bypass between 2005 and 2009, and found that flooding with a flow of 6,000 cubic feet per second (cfs) through March 24 would result in total annual losses to the Yolo County economy - excluding other substantial costs associated with infrastructure maintenance and repairs - of over $1.7 million. (Id. at pp. iii, 22.) By comparing earlier and later flooding end dates, the study illustrated that flooding of the Yolo Bypass later into the planting season has a real and quantifiable impact on the local agricultural economy. This study supports the Association's concerns regarding impacts from increased inundation in the Sutter Bypass.

impacts that are not considered in the DEIR. In all of these ways, Project operations threaten to increase the burden of the existing flood easement beyond historic conditions.

The DEIR admits that the Project will substantially increase inundation and sedimentation in the Sutter Bypass compared to historic conditions (by roughly 10 percent on average, and potentially much higher in any given year). As noted above, impacts to crops, drainage, and irrigation structures will result in increased maintenance activities, including more extensive and more frequent field leveling, and associated costs to Sutter Bypass property owners. Such costs directly increase the burden of the existing flood easement and will affect potential profitability of rice and other crops grown in the Sutter Bypass. More frequent and longer inundation could require a shift to lower value crops, or lead to land conversion, all of which will increase the burden of the existing flood easement compared to historic use, requiring adequate compensation to affected landowners.

IV. Use of Project Facilities for Floodplain Habitat Creation Will Require the Consent of Bypass Property Owners; Addressing Landowner Concerns Will be Essential to Securing Such Consent

As indicated in materials distributed by DWR to Association members, the Project represents the first phase in DWR's Tisdale Weir and Sutter Bypass Program, which includes the Project and, for phase two, the proposed Sutter and Tisdale Bypasses Flood & Multi- Benefit Strategy and Management Plan, under which DWR and/or other public agency partners may modify the existing channels, floodplain, and vegetation in the Sutter and Tisdale Bypasses to improve floodplain habitat. The Association understands that phase two could include significantly expanded flooding of the Sutter Bypass, with flooding occurring over a much longer period of time than historical operation of the weir. Use of the Sutter Bypass for habitat creation would exceed the scope of the existing easement and require consent of the landowners and adequate compensation. Securing the trust of landowners and other stakeholders will be essential to carrying out the Program. To that end, DWR must ensure that landowner concerns with the Project are adequately addressed in the CEQA process.

V. Conclusion

As declared by the Legislature and California courts, the EIR "is the heart of CEQA." (*County of lnyo v. Yorty* (1973) 32 Cal.App.3d 795.) EIRs serve "not only to protect the environment but also to demonstrate to the public that it is being protected." (lbid.) The purpose of an EIR is to both inform other governmental agencies and the public of the environmental impact of a proposed project[5] and "to demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action." (*People ex rel. Dept. of Public Works v. Bosio* (1975) 47 Cal.App.3d 495.)

[5] No Oil, lnc. v. City of Los Angeles (1974) 13 Cal.3d 68.

As discussed herein, the DEIR fails to meet these standards. Far from demonstrating to landowners that they are being protected, the DEIR has increased Sutter Bypass landowner apprehension regarding the Project. There is insufficient information in the DEIR to resolve the concerns raised in the Association's comments on the NOP, and to support its conclusion that Project impacts to agriculture, water quality, and recreation will be less than significant.

Rather, the available information suggests that Project impacts will be substantial and significantly increase the burden of the existing flood easement on Sutter Bypass landowners. Project modifications and mitigation measures capable of avoiding or substantially lessening these potentially significant impacts must be included, and the DEIR must be revised, using appropriate methods and substantial evidence and analysis, so that landowners, local officials, and the public can understand the full scope and severity of potential Project impacts. These modifications, and a good faith effort to disclose relevant information (including the modeling "dashboard" tool) to affected landowners, are essential not only to produce a legally adequate EIR but also to establish trust and maintain a cooperative working relationship with Sutter Bypass landowners for the Project and future state-led habitat restoration efforts in the Bypass. Given the limitations of the existing flood easement, landowner support will be necessary for DWR or other agencies to implement planned future fish habitat projects in the Sutter Bypass. If DWR is unable to address landowner concerns with this Project, it will make it very difficult to secure needed cooperation for future projects within the Sutter Bypass.

In order for the Association to continue its constructive engagement in the Project review process, DWR must provide the requested analyses, including making the above referenced dashboard tool available, and allow additional opportunity for comment on the DEIR before proceeding to prepare the Final EIR. The Association requests that it be immediately notified when the Final EIR is complete, and where the Association may review responses to its comments at least ten (10) days before DWR takes any action to certify the Final EIR or approve the Project.

Pursuant to Public Resources Code section 21092.2, the Association hereby also requests that DWR provide a copy of any Notice of Determination (NOD) filed for the Project, as soon as it is filed. Please mail the NOD to my attention at the address on this letterhead, and also email it to ktaber@somachlaw.com and jon@montnafarms.com. If you have questions about these comments, please do not hesitate to contact Jon Munger at (530) 330-2827 to discuss this letter further.

Sincerely,

Kelly M. Taber
Attorney

Attachment

cc: Sutter County Board of Supervisors
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Yuba City, CA 95993

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ATTACHMENT A

SUTTER BYPASS-BUTTE SLOUGH WATER USERS ASSOCIATION MEMBERS

A & G Montna Properties LP
Anderson R & J Props LP
Bihlman, Dorene L. TR 97 et al.
Central Land Company
Chesapeake Gun Club LLC
Creps Farm LLC
Davis, Helen M. Inc.
De La Torre Rev. Surv. 93' TR et al.
De Wit Farms
DNH Farms
Hanna Family TR et al.
Hilbers, Kurt
Kai Family Foundation
Kai, Mamie Rev TR et al.
King, Kathryn H. '96 Rev. TR et al.
Leal Family TR et al.
Matteoli Brothers
McClatchy Partners LLC
Melinda Nevis Combined Trust et al.
Nall, David and Janice-Denco
Nall Rev. I-V '03 TR et al.
Nordic Industries Inc. et al.
Odysseus Farms
O'Neill, Sean
Pat Laughlin Trust
Perry Family Rev '05 Trust et al.
Pieri Survivors LP et al.
Rai, L. David
Ratliff, James
Rhodes-Stockton Bean Co-op
Rogers, Frank A. Jr. et al.
Rogers, Frank/POSZ Ranch
Rogers, Maxi
Sandhu, Harmandeep & Handeep
Schnabel Revocable '00 Trust, et al.
Shelley Darrough Farmers LP
Sum M Seto Properties LLC et al.
Tarke Farms LP
Tarke, James
Tarke, Stephen
TJ Holdings LP
Tule Basin Farms LLC
Westervelt Ecological Services

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Letter O1 Response	Sutter County Development Services January 15, 2021

O1, Lines 4-23 The comment describes the Sutter Bypass–Butte Slough Water Users' Association and common purposes of its members with parcels located within or immediately adjacent tothe Sutter Bypass. The comment also states that the Association requested that the DEIRassess potential impacts from the Proposed Project within the Tisdale and Sutter Bypasses and the Sacramento River in a comment letter submitted on the Notice of Preparation (NOP). The issues raised in the NOP comment letter from Somach Simmons& Dunn about potential adverse impacts of the Proposed Project were discussed in the DEIR, including, but not limited to, Section 3.2, *Agricultural Resources*; Section 3.4, *Biological Resources*; Section 3.7, *Hydrology*; 3.8, *Recreation*; and Chapter 5, *Alternatives*.

O1, Lines 24-27 The DEIR provides specific information about effects in the Sutter Bypass (by field and by parcel) and sufficient information has been provided for evaluation of impacts associated with implementation of the Proposed Project. Responses to the comments about the DEIR's evaluation of potentially significant impacts to Sutter Bypass agriculture and recreation are provided in Responses O1-3 through O1-39.

O1, Lines 28-36 The commenter questions the DEIR's characterization of a potential, temporary inundation effect on up to 10 percent of the Sutter Bypass farmland fields as "relatively small," especially as the maximum number of consecutive fallowing events are predicted to double for some properties. To clarify, the DEIR concludes that 18 out of 115 fields (approximately 1,026 out of 10,045 acres) would, on rare occasion (e.g., in one or two years out of 22), likely be fallowed as a result of increased flows from the Proposed Project. As presented in the DEIR, these predicted effects would not reasonably foreseeably result in conversion of Farmland to non-agricultural use for any of these fields.

Only one field (Field 70) out of 115 is predicted to experience a "doubling" of the observed maximum number of consecutive fallow years, in this case, going from one to two maximum consecutive years of fallowing. This represents less than 1 percent of the total fields in the Sutter Bypass. Observed fallow years are shown in Attachment B of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis;* the predicted change in fallow years and maximum consecutive fallow years are shown in Figure 9 and Figure 10 of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis.* The vast majority of fields in the Sutter Bypass are not

predicted to experience any increase in the maximum number of consecutive years fallow with the Proposed Project (DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Figure 10).

Furthermore, as it relates to the impact due to the change in fallowing resulting from the Proposed Project, the DEIR addresses potential impacts to agricultural production as a result of delayed planting, and the potential for subsequent permanent agricultural land conversion to other non-agricultural uses, and determined the impacts to be less than significant (see Impacts 3.2-1 and 3.2-2 in DEIR Section 3.2, *Agricultural Resources*). Fallowing of fields/parcels occurs under existing conditions in the Sutter Bypass and does not necessarily result in the field being converted to non-agricultural use or a conflict with existing zoning or agricultural use or Williamson Act contracts. Therefore, it is not reasonably foreseeable with implementation of the Proposed Project that an increase of one to two years of fallowing over a 22-year timeframe or increasing consecutive fallowing for one to two additional years would result in Farmland being converted to non-agricultural use or in a conflict with existing zoning or agricultural use or Williamson Act contract.

For additional information on Proposed Project Sutter Bypass flow and potential impacts on agricultural resources, see Master Comment Response 2.

O1, Lines 36-42 The DEIR provides adequate information that describes the frequency, extent, and duration of inundation for fields in the Sutter Bypass with implementation of the Proposed Project. The DEIR also presents adequate analysis evaluating the impacts to agricultural and recreational uses associated with inundation and sedimentation to the fields in the Sutter Bypass. This information is presented in DEIR Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures,* and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* and is amplified for each parcel in the Sutter Bypass in Attachments A–F of the FEIR.

For each year and season within the analysis period (Water Years 1997–2018), the HPC commercial software package TUFLOW (TUFLOW) was used to calculate the number of wet days for fields and parcels for existing and Proposed Project conditions. As described in the DEIR (pages 3.2-12 and 3.3-8 to 3.3-9), a wet day assumes the given field or parcel is inundated at a depth of at least 0.1 feet over at least 30 percent of its area and is effectively considered inundated (wet) on that day for purposes of the analysis presented in the DEIR. Thus, depth is effectively the same as stage or water level and, as a metric, the number of wet days comprises both a

frequency and a duration (e.g., how long was the parcel/field inundated). Further, the extent of inundation is similarly built into the TUFLOW model results, both at the field/parcel scale and at the scale of the entire Tisdale and Sutter Bypasses (e.g., 30 percent of the field/parcel must be inundated to be considered wet, and the calculation is made for all fields/parcels, individually, throughout the Tisdale and Sutter Bypasses). For the purposes of evaluating the CEQA significance criteria for impacts on agricultural resources and recreation, the frequency, extent, and duration of inundation, particularly the number of days a given field/parcel may be inundated in a particular year and how that may change as a result of the Proposed Project, were included in the analysis and discussed.

As stated in Responses O1-3 and O1-21 and Master Comment Responses 2 and 3:

– As a result of the Proposed Project, only 18 out of 115 fields (approximately 1,026 out of 10,045 acres) of farmland fields in the Sutter Bypass (approximately 10 percent of fields) would experience a change in fallowing over a 22-year simulation period.

    - For 15 of the 18 fields, there would be one additional year of fallowing.

    - For three of the 18 fields, there would be two additional years of fallowing.

– In one waterfowl hunting season (September 28 through February 12), the Proposed Project would take up to two days out of the 138-day hunting season for the private waterfowl hunting clubs in the Sutter Bypass.

As shown on Table 1, Figure 9, Figure 10, Figure 11, and Figure 12 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, Project-condition results are presented for all parcels and fields in the Sutter Bypass. In Figures 9 and 10 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, those fields for which an actual (year by year, not aggregated) agricultural resources impact was identified are called out in the rightmost panel. Water year types are shown in Figure 2, Appendix C (also discussed in DEIR Section 3.2.4 on page 3.2-8).

Table 5-4 on page 5-25 in DEIR Chapter 5, *Alternatives,* also presents the predicted change in flow volume, frequency, and duration (to the Sutter Bypass) through the notch as a result of the Proposed Project, aggregated

by water year type. Under the No Project Alternative, an average of 838,412 acre-feet of water would pass over the weir annually, compared to 924,569 acre-feet with the Proposed Project. As described in Attachment A of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, this additional flow was explicitly included in the TUFLOW modeling completed to assess the potential effects of the Proposed Project. Attachment A in this FEIR illustrates Tisdale Weir flow hydrographs for existing and Proposed Project conditions. The Proposed Project duration of inundation and effects on stage/water levels downstream of the Tisdale Bypass were discussed in the DEIR.

See also Master Comment Response 2 and 3 regarding the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources and recreation, respectively.

The potential impacts of the Proposed Project on sedimentation within the Tisdale Bypass and areas downstream (including the Sutter Bypass) were analyzed and addressed in the DEIR (Section 3.7, *Hydrology*, Chapter 5, *Alternatives*, and DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum*).

For additional information on sediment/debris accumulation and movement in the Tisdale and Sutter Bypasses from operation of the Proposed Project, see Master Comment

Response 1. See also Master Comment Responses 2 and 3 regarding TUFLOW model inputs.

O1, Lines 42-48 The commenter notes that increases in adverse effects would exceed the scope of the existing flood easement and would require landowner compensation. There would be no significant increase in inundation that would result in a change in existing agricultural and recreational uses in the Sutter Bypass.

As described in Response O1-4, changes in the frequency, extent, duration of inundation, and potential sediment changes associated with implementation of the Proposed Project were analyzed in the DEIR (e.g., see DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis* and Appendix H, *Sediment Budget Analysis Technical Memorandum*). As it relates to potential Project impacts on agricultural and recreation uses of fields and parcels in the Sutter Bypass, these were determined to be less than significant in the DEIR.

See also Response O1-3 and Master Comment Response 2 regarding the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources.

The portion of the comment regarding landowner compensation needed due to exceeding the scope of the existing flood easement does not constitute or contribute directly or indirectly to an effect on the physical environment. CEQA Guidelines Section 15131(a) through 15131(c) provide guidance on the discussion of economic (and social) effects in an EIR. Specifically, such effects may be included in an EIR but "shall not be treated as significant effects on the environment." However, economic and social effects may be used to determine the significance of physical changes caused by a project, but these changes "need not be analyzed in any detail greater than necessary to trace the chain of cause and effect." Any economic impacts from the Proposed Project would not constitute or contribute directly or indirectly to an effect on the physical environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

O1, Lines 49-51 The DEIR's impact assessment methodology and assumptions are adequate and sufficient information has been provided for evaluation of impacts associated with implementation of the Proposed Project. Comments about the DEIR's impact assessment methodology and assumptions and information provided to landowners are addressed in Responses O1-7 through O1-17.

O1, Lines 52-62 The methodology used in the DEIR to evaluate potential impacts from inundation and sedimentation is adequate and sufficient to evaluate potential Project impacts to fields and parcels in the Sutter Bypass. This methodology is fully described in in DEIR Section 3.2.4, *Impacts and Mitigation Measures,* Section 3.8.4, *Impacts and Mitigation Measures,* and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*.

The DEIR does not base the agricultural land fallowing impacts analysis on modeled results averaged over the analysis period as stated in the comment; the agricultural impacts analysis uses a daily time step/increment to assess

impacts. The TUFLOW model and analysis was run for a 22-year simulation period (Water Years 1997–2018) (not 12 years), including a variety of Water Year types as categorized by water year typology based on the Sacramento Valley Water Year Index (e.g., Wet, Above Normal, Below Normal, Dry, and Critical). See page 5 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis.*

Predicted changes in fallowing are not compared to an average of fallowing events, they are compared to the total observed fallowing events. Existing data (USDA CropScape) on fallowing within the Sutter Bypass was used in the DEIR analysis. These data were only available for a 12-year period (2007–2018) and were used to characterize existing fallowing practices within the Sutter Bypass (the commenter conflates the two – the model period and the period over which actual fallowing data are available). See page 21 in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR. See Master Comment Responses 2 and 3 regarding the simulation time frame; change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project; and the potential impacts with respect to agricultural resources and duck club operations.

O1, Lines 62-68 Potential fallowing impacts to agriculture were identified by specific year and date (see DEIR Appendix C, TUFLOW Model Results and CEQA Impact Analysis, Figure 9). Water year types are shown in Figure 2, Appendix C (also discussed in DEIR Section 3.2.4 on page 3.2-8). The additional causes of fallowing noted by the commenter (i.e., surface water diversions curtailed and flooding late in the year) are acknowledged in the DEIR (see page 21, Appendix C, TUFLOW Model Results and CEQA Impact Analysis). The changes in fallowing did not result in conversion of farmland to non-agricultural use for these fields.

See also Response O1-4 and Master Comment Response 2 regarding the change in frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources.

O1, Lines 68-71 There are no “extreme” water level changes predicted to occur as a result of the Proposed Project. Regardless, the various water year types (for example, a wet water year) do not directly relate to the Proposed Project’s changes in flows in the bypasses. Water year type is directly related to reservoir water supplies and does not necessarily link with flood hydrology.

For the private waterfowl hunting clubs in the Sutter Bypass on Williamson Act parcels, the predicted increase in the number of wet days, on average, is at most one day per year (i.e., the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for one additional day per year during a 138-day duck hunting season). For all other private parcels within the Sutter Bypass, the predicted increase in the number of wet days during waterfowl season, on average, is at most three days per year (i.e., similarly, the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for up to three additional days per year during a 138-day duck hunting season) (see Table 1 and Figure 12 in Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* of the DEIR). Beyond this, there would be no effective change in water levels during time periods when duck hunting typically occurs (see Master Comment Response 3). As concluded in Impact 3.8-2, given the seasonal and year-to-year variation in inundation within the Sutter Bypass under existing conditions, this small predicted change as a result of the Proposed Project would not result in any substantial loss of recreational opportunities with regard to waterfowl hunting. For additional information on potential Project impacts to recreational land use (duck hunting) see Master Comment Response 3.

O1, Lines 72-78 The commenter is correct that impacts may vary based on location with the Sutter Bypass and property-specific analyses (both at the parcel and field scale) were provided for flow- related impacts in the DEIR. As shown on Table 1, Figure 2, Figure 9, Figure 11 and Figure 12 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR, results are presented for all parcels and fields in the Sutter Bypass. In Figures 9 and 10, Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR, only years and fields for which an agricultural resources impact was identified are called out in the rightmost panel. This information was referenced and summarized in DEIR Section 3.2, *Agricultural Resources,* and Section 3.8, *Recreation*. Sediment-related impacts are assessed and calculated in a broader context, but the conclusions and values (e.g., a potential suspended sediment load increase of approximately 8–9 percent over approximately 10 years; see Response O1-4) can be applied to or assumed for the parcel and/or field scale as well. The predicted, Project-related change in suspended sediment flux is calculated and presented for each year analyzed (see DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum*,). Potential impacts to agriculture and the last day wet were identified by field, specific year, and date (see Figure 9, Appendix C). Water year type, for either flow- or sediment-related metrics, are shown in Figure 2, Appendix C.

As described on page 16 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR, the following definition was used relating to flow frequency, duration, and timing and magnitude (water depths and extents) in the Sutter Bypass for the "Last Day Wet." A justification on why these definitions and/or dates are used are described in Section 3.1, Methods, of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR.

The Last Day Wet is defined as the date the ground is considered to be dry enough for tractors to chisel fields. This is assumed to occur when 70 percent or more of the field is dry (less than 0.1 feet depth) (Reclamation and DWR 2019), as computed by the TUFLOW model at the end of a given day. Thus, as a metric, the last day wet comprises inundation extent, water depth, and timing (duration is not applicable because the definition relates to only the end of the inundation period).

See also Master Comment Response 2. Detailed model results of water depth and inundated area, for each parcel in the Sutter Bypass, are presented in Attachments C and D of this FEIR. Attachment E of this FEIR shows existing depth and inundated area data for wet and dry days for all parcels in the Sutter Bypass and the average changes in water depth, by Water Year type, for each parcel in the Sutter Bypass.

O1, Lines 79-88 Use of 2020 topography of the Tisdale Bypass in the TUFLOW model would not meaningfully change the hydraulics of the bypass or the results of the model. The topography used in the TUFLOW model represented the best available contiguous, contemporary data set for the entire model domain (i.e., the Tisdale and Sutter Bypasses); the use of topographic data from different years for large areas of the model may introduce modeling artifacts and/or discontinuities that would complicate the interpretation of results.

As noted on page 6 of Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, of the DEIR, the topographic data used for the TUFLOW model were acquired shortly after a DWR sediment maintenance project in 2007 removed approximately 1.7 million cubic yards of sediment from the Tisdale Bypass (by comparison, the 2020 DWR sediment removal project removed approximately 500,000 cubic yards of sediment from the Tisdale Bypass) and, in part, reflects the results of the periodic sediment maintenance performed by DWR in accordance with California Water Code Section 8361.

As described in Section 2.2.3, *Topographic and Bathymetric Survey Data,* of Appendix C of the DEIR, the TUFLOW model existing conditions terrain in the Tisdale and Sutter Bypasses comes from a variety of sources and represented the best available information. Moreover, it is critical to understand the fundamental importance of (1) comparative modeling, and (2) best available data. Comparative modeling is where two condition states are modeled and then compared to discern the differences between the two; in this instance, the different conditions are (a) existing hydrologic conditions at Tisdale Weir, and (b) hydrologic conditions at the Tisdale Weir with the addition of proposed notch operations. In this comparative modeling, it is vital to keep all other assumptions fixed so that the signal of the change can be identified. The standard practice in this regard is to use the best available data that represents the boundary conditions for the model domain for the period of record being simulated. This is done using the same topography and other boundary conditions, so that model calibration is feasible and consistent and the change from the two different model runs (existing conditions versus Proposed Project conditions) can be clearly assessed. It is extraordinarily rare for a modeling assessment that is making simulations across multiple years (let alone more than two decades) to have available topography, bathymetry, and other boundary condition information available for *each* year simulated (in other words, *all* of these data were collected and or/surveyed for *each* of those years). As described in Section 2.2.3, *Topographic and Bathymetric Survey Data*, of Appendix C of the DEIR, the existing conditions data come from a variety of sources; however, the primary topographic data source is the 2010 Central Valley Floodplain Evaluation and Delineation (CVFED) Light Detection and Ranging (LiDAR) data, which comprise most of the Tisdale and Sutter Bypasses. Collection of LiDAR data to represent the ground surface, particularly within the Sutter Bypass, can be complicated by a number of factors, including residual ponding and flooding (e.g., in the Sutter National Wildlife Refuge or within duck clubs) as well as very thick vegetation (e.g., a mature rice crop). The 2010 LiDAR data are considered the most-robust available data because these data were subject to considerable post-processing and related analyses in order to refine the final topographic surface, and therefore represents the best-available, most contiguous, contemporary data set for the majority of the model domain. The TUFLOW model also included enforcement of "breaklines" for representing smaller agricultural berms (see page 10 of Appendix C of the DEIR) as well as the delineation of active agricultural fields (see page 15 of Appendix C of the DEIR).

See Master Comment Response 1 regarding Tisdale Bypass maintenance. See also Master Comment Responses 2 and 3 regarding the TUFLOW model development.

O1, Lines 89-99

A coupled one-dimensional/two-dimensional hydrodynamic model of the Tisdale and Sutter Bypasses using TUFLOW was developed to analyze hydrology and hydraulics under existing and Project conditions and to quantify any changes in inundation downstream in the Sutter Bypass that could result from the Proposed Project (as described on page 3 in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR, and as described on page 3.2-8 in Chapter 3.2, *Agricultural Resources*, of the DEIR).

Section 2, *Hydrology and Hydraulics*, in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR, describes the inputs for the model, and the development, parameterization, calibration, and validation of the model. Section 2.1, *Hydrology*, in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR, describes how the major surface water inputs (hydrologic boundary condition time series for flow and/or stage) were developed based on the best available data (e.g., DWR California Water Data Library, U.S. Geological Survey gages) and augmented with previously modeled flows (e.g., CalSim 3, Central Valley Hydrology Study) or other means to fill gaps in the data record (e.g., regression with nearby gages). This hydrologic information includes high- (flood) and low- (late-spring/early-summer) flows (high discharge levels and low discharge levels); thus, the TUFLOW model simulates high and low-flow conditions. Specific hydrology inputs and other boundary conditions were described further in Section 2.2, *Hydraulic Model*, in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR.

The TUFLOW model calibration/validation discussion in the DEIR is a summary of the work performed. Additionally, relevant information related to modeling (i.e., flow split calculations at the Sacramento River/Tisdale Weir) are provided in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR. See also Master Comment Responses 2 and 3 regarding the TUFLOW model development.

O1, Lines 100-118

A web-based modeling results and analysis tool (dashboard) was developed by DWR during the planning for the Proposed Project. The dashboard is a convenient, interactive means of querying, displaying, and summarizing a wide array of TUFLOW model output (which could serve multiple purposes). The "dashboard" tool was not intended for determining impacts

of the Proposed Project under CEQA. All output from the model is not directly relevant to determination of significance under CEQA; the relevant output was used, per the approach and methodology described in DEIR Sections 3.2 and 3.8 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* to analyze the potential impacts of the Proposed Project under CEQA.

All relevant components of the TUFLOW model outputs, as viewed by the dashboard and generally represented in Attachments A–F of this FEIR, were available to DWR during preparation of the DEIR and were used in the CEQA analysis conducted to evaluate potential impacts to field/parcels within the Sutter Bypass from the Proposed Project.

See also Master Comment Responses 2 and 3 regarding the TUFLOW model development.

O1, Lines 119-129

The DEIR explains the effect of weir hydraulics on the "hinge" point (see Appendix H, *Sediment Budget Analysis Technical Memorandum,* page 10) and maintenance of the hinge point would not be necessary to limit or reduce the Proposed Project's potential impacts. Therefore, the maintenance of the hinge point would not be necessary for the Proposed Project to operate as proposed and is not part of the Proposed Project.

The hinge point is a persistent topographic feature (i.e., an area of subtly higher ground) driven by weir hydraulics, whereby an area of scour forms directly downstream of a weir, a subsequent higher elevation area forms just downstream of this, and then the topography typically drops off slightly once again, thus forming a higher "hinge" point. This effect of weir hydraulics is discussed in the DEIR (e.g., Appendix H, page 10) and is well documented both generally and in relation to the Sacramento River weirs by Singer and Aalto (2009) and Singer et al. (2008). The presence of this feature (the hinge point) in the Tisdale Bypass is evident in topographic maps dated as early as 1924.

Monitoring and maintenance of the hinge point would not be necessary to limiting the Proposed Project's potential impacts or making potential impacts less severe, because when the river water surface recedes to an elevation range near that of the hinge point the flow moving through the notch (and thus down the Tisdale Bypass) would be less than approximately 200 cfs (see Figure 6 of Attachment A, *Tisdale Weir 1D HEC-RAS Modeling,* of DEIR Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*), and the TUFLOW model did not show any impacts near this flow range. Thus, even if the hinge point were to be eroded (which is

not anticipated given that this feature is formed by depositional forces, not erosional forces), the flow down the bypass when the hinge point becomes relevant would be very minimal and not result in flooding. For context, the predicted peak flow through the notch is approximately 3,200 cfs (see Figure 6 of Attachment A, *Tisdale Weir 1D HEC-RAS Modeling,* of DEIR Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*).

See also Master Comment Response 1 regarding the "hinge" point.

O1, Lines 129-130

As explained in Response O1-14, maintenance of the hinge point would not be necessary to limit or reduce the Proposed Project's potential impacts. Therefore, the maintenance of the hinge point is not necessary for the Proposed Project to operate as proposed and is not part of the Proposed Project. By the time the river recedes to near the hinge-point elevation (about 37 feet), flow through the notch would be about 200 cfs (see DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Attachment A, Figure 6) and it would have no reasonable chance of inducing flooding on downstream fields or parcels (there could be multiple fields in a single parcel).

See also Master Comment Response 1 regarding the "hinge" point.

O1, Lines 131-137

The "natural" sediment deposits referenced by the commenter, and the topography downstream of the weir that results in the subtle high point, or "hinge" point, is and would be maintained by the hydraulics that result when the full width of the weir is spilling. This component of weir operation would remain largely unchanged, i.e., the weir will still spill during floods and the portion of flow through notch would be a small fraction of that flowing over the weir crest. In general, the topography in the area just downstream of the weir is reformed in a consistent way after most weir spill events (e.g., scour occurs on the downstream side of the weir and an area of deposition forms just beyond this). Project-related sediment deposition is addressed in the DEIR, both with respect to the broader Tisdale Bypass sediment budget as well as the local changes in the weir/notch hydraulics (DEIR Section 3.7, *Hydrology,* and DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum*).

By the time the river recedes to near the hinge-point elevation (about 37 feet), flow through the notch would be less than about 200 cfs (see DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Attachment A, Figure 6). Any small, potential changes in the topography

near the hinge point that may occur due to flow through the notch would ultimately have little to no effect on downstream flow or flooding.

See also Master Comment Response 1 regarding the "hinge" point.

O1, Lines 137-141 As explained in Response O1-14, maintenance of the hinge point would not be necessary to limit or reduce the Proposed Project's potential impacts. Therefore, the monitoring and maintenance of the hinge point is not necessary for the Proposed Project to operate as proposed and is not part of the Proposed Project. (See Appendix H, *Sediment Budget Analysis Technical Memorandum,* page 10.) See Responses O1-15 and O1-16 and Master Comment Response 1 regarding the "hinge" point.

O1, Lines 142-143 Comments regarding the DEIR's evaluation of the Proposed Project's effects on agriculture and recreation are addressed in Responses O1-19 through O1-32.

O1, Lines 144-150 The DEIR does not limit the analysis to whether increases in wet days may result in impacts to agricultural resources or recreation. As described on pages 15 through 16 and page 29 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, the following definitions and assumptions were used relating to flow frequency, duration, and timing and magnitude (water depths and extents) in the Sutter Bypass, including what is a "wet day," "number of wet days," "last day wet," "drying and preparation period," "planting dates," "agricultural field preparation and sowing period," and "frequency of inundation." A justification on why these definitions and/or dates are used are described in Section 3.1, Methods, of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR.

The standards of significance for agricultural resources and recreation impacts used in the DEIR are based on Appendix G of the State CEQA Guidelines and concern impacts that would result in farmland conversion, conflict with zoning or a Williamson Act contract, or increase use of existing recreational facilities such that it would cause substantial physical deterioration or require construction of additional recreational facilities. In addition, an impact was considered significant if the Proposed Project would result in permanent displacement of existing recreational facilities or a substantial permanent decrease in access to existing recreational facilities or opportunities.

See Responses O1-20 through O1-23 for additional information. See Master Comment Responses 2 and 3 for more information on TUFOW model inputs.

O1, Lines 151-161

The DEIR does describe the predicted change in flow volume, frequency, and duration (to the Sutter Bypass) through the notch as a result of the Proposed Project and the TUFLOW model does provide this information. Table 5-4 on page 5-25 in DEIR Chapter 5, *Alternatives*, presents the predicted change in flow volume, frequency, and duration (to the Sutter Bypass) through the notch as a result of the Proposed Project, aggregated by water year type. Under the No Project Alternative, an average of 838,412 acre-feet of water would pass over the weir annually, compared to 924,569 acre-feet with the Proposed Project. As described in Attachment A of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR, this additional flow was explicitly included in the TUFLOW modeling completed to assess the potential effects of the Proposed Project. Attachment A to this FEIR illustrates Tisdale Weir flow hydrographs for existing and Proposed Project conditions.

All of the metrics referenced by the commenter—(1) change in the amount of flow in the Sutter Bypass downstream of the Tisdale Weir, (2) change in frequency of flooding, (3) change in depth of flooding, and (4) change in duration of inundation—were analyzed and included in the determination of impacts described in the DEIR for agricultural resources and recreation, also including the timing of any increase in flow. Specifically, the TUFLOW model assessed the Proposed Project's increase in flows in the Tisdale and Sutter Bypasses when the gate is open and the stage in the Sacramento River is between elevation 37 and 44 feet NAVD88 and describes the additional flow, increased frequency (how many additional wet days in the 22-year simulation period), and the timing (the assumed agricultural and recreation seasons).

For example, for each year and season within the analysis period (Water Years 1997– 2018), the TUFLOW model was used to calculate the number of wet days for fields and parcels for existing and Proposed Project conditions. As described in the DEIR, a wet day assumes the given field or parcel is inundated at a depth of at least 0.1 feet over at least 30 percent of its area, and is effectively considered inundated on that day for purposes of the analysis presented in the DEIR. Thus, as a metric, the number of wet days comprises both a frequency and a duration (e.g., for how long was the parcel/field inundated). Further, the extent of inundation is similarly built into the analysis TUFLOW model results, both at the field/parcel scale and at the scale of the entire Tisdale and Sutter Bypasses (e.g., 30 percent of the

individual field/parcel must be inundated to be considered wet, and the calculation is made for all fields/parcels, individually, throughout the Tisdale and Sutter Bypasses). This information was used as the basis for the DEIR finding in Impact 3.2-1 (pages 3.2-13 through 3.2-15) that the Proposed Project would not result in fallowing such that permanent agricultural land conversion to non- agricultural uses would occur.

See also Response O1-4 and Master Comment Response 2 for additional information on definitions used relating to flow, frequency, duration, and timing and magnitude (water depths and extents). Detailed model results of water depth and inundated area, for each parcel in the Sutter Bypass, are presented in Attachments C and D of this FEIR. Attachment C of this FEIR shows existing depth and inundated area data for wet and dry days for all parcels in the Sutter Bypass and the average changes in water depth, by Water Year type, for each parcel in the Sutter Bypass. See also Master Comment Responses 2 and 3, respectively, regarding Project effects on agricultural operations and recreation in the Sutter Bypass.

O1, Lines 162-180

The comment provides information habitat suitability for migratory waterfowl that use the Sutter Bypass. The comment is noted. Further, the characterizations of potential impacts described in the DEIR are not constrained, as suggested by the commenter, but rather are directly related to the CEQA standards of significance.

As noted in DEIR Section 3.8.4, *Methods of Analysis*, the Sutter Bypass is a floodway that conveys floodwater and frequently inundates duck hunting sites within the Sutter Bypass (without the Proposed Project) at depths considerably greater than a few feet and this closes access roads. When the sites are not inundated by floodwaters, some areas are actively managed (via diversion and pumping) to generate the desired, shallow-flooded habitat (less than 18 inches in depth).

To assess any potential flow-related impacts of the Proposed Project, a comparative assessment of the additional wet days resulting from increased flows from the Proposed Project was used as a proxy for a lack of access/too wet to hunt. The term wet day assumes the given field or parcel is inundated at a depth of at least 0.1 feet over at least 30 percent of its area, and is effectively considered inundated on that day for purposes of the analysis presented in the DEIR. Thus, as a metric, a wet day comprises inundation extent, water depth and duration (see also Master Comment Response 3 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*).

DEIR Impact 3.8-2 (pages 3.8-11 through 3.8-13), and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* discusses the predicted average annual change in the number of wet days compared to existing conditions, by parcel, as a result of the Proposed Project. For the private waterfowl hunting clubs in the Sutter Bypass on Williamson Act parcels, the predicted increase in the number of wet days, on average, is at most one day per year (i.e., the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for one additional day per year during a 138-day duck hunting season). For all other private parcels within the Sutter Bypass, the predicted increase in the number of wet days during waterfowl season, on average, is at most three days per year (i.e., similarly, the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for up to three additional days per year during a 138-day duck hunting season) (see Table 1 and Figure 12 in Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* of the DEIR). Beyond this, there would be no effective change in water levels during time periods when duck hunting typically occurs (see Master Comment Response 3). As concluded in DEIR Impact 3.8-2, given the seasonal and year-to-year variation in inundation within the Sutter Bypass under existing conditions this small, predicted change as a result of the Proposed Project would not result in any substantial loss of recreational opportunities with regard to waterfowl hunting.

For additional information on Proposed Project Sutter Bypass flow and potential impacts on recreation, see Master Comment Response 3.

O1, Lines 181-183

As described in Response I4-30, the Creps duck club is not considered a historical resource.

To qualify as historically significant under CEQA, physical elements associated with the organization (such as a building, structure, site, or object) would need to be present for evaluation. A "site" typically means an archaeological site, but can also refer to a designed landscape. All of the physical, manmade elements in the area (e.g., the Sutter Bypass, the levees, the canals) are associated specifically with the bypass, not the duck club. Without a club house or any other physical structures associated with the duck club, or specifically manmade landscaping tied directly to the club, there is no evidence of function. The duck club does not fit the criteria to be considered a historic landscape.

Given that all of the physical evidence of the duck club located in the Sutter Bypass is washed away during flood events, or are physical elements

associated with flood control in the bypass (levees, canals, access roads, etc.), there is not any actual historic evidence of the duck club. Therefore, it is not considered a historical resource.

O1, Lines 183-186

As stated in Response O1-21, a comparative assessment of the additional wet days resulting from increased flows from the Proposed Project was used as a proxy for a lack of access/too wet to hunt. For each year and season within the analysis period (Water Years 1997–2018), the TUFLOW model was used to calculate the number of wet days for fields and parcels for existing and Proposed Project conditions. As shown on Table 1, Figure 9, Figure 10, Figure 11 and Figure 12 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, results are presented for all parcels and fields in the Sutter Bypass.

DEIR Impact 3.8-2 (pages 3.8-11 through 3.8-13), and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* discusses the predicted average annual change in the number of wet days compared to existing conditions, by parcel, as a result of the Proposed Project. For the private waterfowl hunting clubs in the Sutter Bypass on Williamson Act parcels, the predicted increase in the number of wet days, on average, is at most one day per year (i.e., the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for one additional day per year during a 138-day duck hunting season). For all other private parcels within the Sutter Bypass, the predicted increase in the number of wet days during waterfowl season, on average, is at most three days per year (i.e., similarly, the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for up to three additional days per year during a 138-day duck hunting season) (see Table and Figure 12 in Appendix C, TUFLOW Model Results and CEQA Impacts Analysis, of the DEIR). Beyond this, there would be no effective change in water levels during time periods when duck hunting typically occurs (see Master Comment Response 3).

O1, Lines 187-201

The DEIR does not predict a substantial increase in sediment deposition, as stated in the comment, nor does the Proposed Project propose sediment removal in the Tisdale or Sutter Bypasses. Although the Proposed Project would increase the volume of sediment deposited in the Tisdale Bypass by approximately 8–9 percent over 10 years, this amount of expected deposition is within the historical range of sediment removed by DWR in the Tisdale Bypass through existing O&M activities. Additionally, with sediment and debris removal anticipated to occur annually specifically in the footprint of the Proposed Project (DEIR Figure 2-2) to maintain fish passage conditions, no significant increase in sediment deposition relative

to existing amounts would occur and the Proposed Project would not require increased removal of sediment and debris downstream in the Tisdale Bypass compared to existing O&M activities (DEIR page 3.7-21).

The DEIR concludes that the Proposed Project may increase the volume of suspended sediment delivered to the bypass and areas downstream by approximately 8 percent over 10 years, and may increase the net volume of sediment deposited in the bypass by up to approximately 9 percent over 10 years (assuming that the eroded volume would not change) (page 3.7-19). The 8–9 percent refers to the total volume change over approximately 10 years (Water Years 2008–2017), which includes water years with higher and lower flood flows; predicted changes in sediment flux for each of those years are given in DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum* (Tables 2 and 3). The largest incremental increases (by year) are in the years when relatively little water and sediment are being delivered to the bypass. Further, not all of the additional sediment delivered by the notch would be during flood conditions, and so it would remain in the Tisdale Bypass or the West Borrow Canal and not be distributed within floodwaters over a broader area (e.g., fields in the Sutter Bypass).

The additional volume of sediment that may be delivered to and deposited in the Tisdale Bypass (and ultimately the Sutter Bypass) as a result of the Proposed Project is, in any given year or even considered cumulatively, a very small volume of sediment compared to the downstream area of delivery. For example, if all the additional sediment predicted to be delivered over a 10-year period as a result of the Proposed Project (approximately 136,000 cubic yards; see Tables 2 and 3 in Appendix H, *Sediment Budget Analysis Technical Memorandum*, of the DEIR) were to be spread over approximately 1,000 acres (which would represent only a small fraction of the Sutter Bypass area), it would equate to a depth of less than 0.08 feet. Even this relatively small depth value should be considered a very conservative estimate, as it is unrealistic to assume all the sediment delivered would be deposited (versus a large portion further transported downstream), and further, it is unrealistic to assume that it would all be deposited over such a small (1,000-acre) area. For comparison, the combined floodplain area of the Tisdale Bypass and the Sutter Bypass (that portion running from the Tisdale Bypass downstream) is approximately 12,800 acres.

As stated in DEIR Chapter 1, Introduction, DWR operates and maintains the Tisdale Bypass in accordance with California Water Code Section 8361 and the Tisdale Bypass's maintenance objectives are governed by the Operations and Maintenance Manuals developed by USACE as part of the

Sacramento River Flood Control Project. Maintenance activities include clearing sediment and vegetation, repairing and guarding against erosion and subsidence, making appropriate repairs to flood control facilities, and performing necessary maintenance of State facilities. Further, at a programmatic level, the current DWR maintenance activities have environmental (CEQA) and permitting coverage under the Environmental Permitting for Operation and Maintenance or EPOM Program (2018 EIR, State Clearinghouse Number 2015052035). Sediment maintenance in the Tisdale and Sutter Bypasses will occur as currently practiced, with or without the Proposed Project, and the potential increase in sediment deposition that could occur with the Proposed Project is within the historical range of sediment removed by DWR through existing O&M activities.

For additional information on Tisdale Bypass O&M, see also Master Comment Response 1.

O1, Lines 202-217

DWR acknowledges the commenter's observations about the existing challenges of farming within an engineered flood bypass system designed to periodically convey large amounts of water and sediment. Land use activities within a floodway are inherently more constrained than for otherwise similar activities on the land side of a levee.

As stated in Response O1-24, the DEIR addressed the potential for increased sedimentation and concluded that an 8–9 percent potential increase in sediment discharge and deposition over approximately 10 years would not result in a significant impact because it is within the historical range of sediment removed by DWR in the Tisdale Bypass through existing O&M activities. For context, if all the additional sediment predicted to be delivered over a 10-year period as a result of the Proposed Project (approximately 136,000 cubic yards; see Tables 2 and 3 in Appendix H, *Sediment Budget Analysis Technical Memorandum*, of the DEIR) were to be spread over approximately 1,000 acres (which is only a small fraction of the Sutter Bypass area), it would equate to a depth of less than 0.08 feet. Even this relatively small depth value should be considered a very conservative estimate, as it is unrealistic to assume all the sediment delivered would be deposited and it is further unrealistic to assume that it would all be deposited over such a small area. For comparison, the combined bottom area of the Tisdale Bypass and the Sutter Bypass (that portion from the Tisdale Bypass downstream) is approximately 12,800 acres.

Wood debris is also addressed in the DEIR (e.g., see DEIR Chapter 5, *Alternatives*, as well as Appendix J, *Engineering Feasibility Report* and Appendix B, *Large Wood Debris at Tisdale Weir Technical Memorandum*) and is not expected to be changed or substantially effected by the Proposed Project. The change in Tisdale Bypass flow as a result of the Proposed Project and the potential impacts with respect to inundation on downstream properties is addressed in the DEIR (Section 3.7, *Hydrology*, and Chapter 5, *Alternatives*).

The 2007 and 2020 sediment removal projects were different projects, independent from the Proposed Project, and were subject to their own environmental review (Tisdale Bypass Channel Rehabilitation Project 2007 IS/MND, State Clearinghouse Number 2007022044, and Tisdale Bypass Sediment Removal 2020 Project IS/MND, State Clearinghouse Number 2020019015) and permitting processes. The DEIR analyzed the Tisdale Weir Rehabilitation and Fish Passage Project (Proposed Project), and the potential changes in sedimentation as a result of the Proposed Project were analyzed and addressed in the DEIR (Section 3.7, *Hydrology*, and Chapter 5, *Alternatives*).

Additional water from the Proposed Project could affect flow in the West Borrow Canal, and the process of flooding by way of the West Borrow Canal was considered and is represented in the TUFLOW model used for the Project analysis, as described in DEIR Section 3.2, *Agricultural Resources,* and DEIR Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* (e.g., the model domain was defined sufficiently upstream to represent the distribution of flows between the East and West Borrow Canals of the Sutter Bypass [DEIR page 3.2-8 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* page 6] and Weir 1 along the West Borrow Canal is reflected in the model [DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* page 12]). Therefore, the findings on the change in the frequency, extent, and duration of inundation as a result of the Proposed Project capture potential changes in flow from the West Borrow Canal.

O1, Lines 218-228

The Proposed Project would not result in an increase in sediment and debris that would result in adverse impacts to agricultural operations and associated facilities, including drainage canals. As described in Responses O1-24 and O1-25, DEIR concluded that an 8–9 percent potential increase in sediment discharge and deposition over approximately 10 years as a result of the Proposed Project would not cause a significant increase in sediment deposition relative to existing amounts because it is within the historical range of sediment removed by DWR in the Tisdale Bypass through existing

O&M activities. The 8–9 percent refers to the total volume change over approximately 10 years (Water Years 2008–2017), which includes multiple water year types, and the predicted changes in sediment flux for each of those years are given in DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum* (Tables 2 and 3). The largest incremental increases (by year) are in the years when relatively little water and sediment are being delivered to the bypass. Further, not all of the additional sediment delivered by the notch would be during flood conditions, and so it would remain in the Tisdale Bypass or the West Borrow Canal and not be distributed within floodwaters over a broader area (e.g., fields in the Sutter Bypass).

The additional volume of sediment that may be delivered to and deposited in the Tisdale Bypass (and ultimately the Sutter Bypass) as a result of the Proposed Project is, in any given year or even considered cumulatively, a very small volume of sediment compared to the downstream area of delivery. For example, if all the additional sediment predicted to be delivered over a 10-year period as a result of the Proposed Project (approximately 136,000 cubic yards; see Tables 2 and 3 in Appendix H, *Sediment Budget Analysis Technical Memorandum,* of the DEIR) were to be spread over approximately 1,000 acres (which would represent only a small fraction of the Sutter Bypass area), it would equate to a depth of less than 0.08 feet. Even this relatively small depth value should be considered a very conservative estimate, as it is unrealistic to assume all the sediment delivered would be deposited (versus a large portion further transported downstream) and further it is unrealistic to assume that it would all be deposited over such a small (1,000- acre) area. For comparison, the combined floodplain area of the Tisdale Bypass and the Sutter Bypass (that portion running from the Tisdale Bypass downstream) is approximately 12,800 acres.

For additional information on Tisdale Bypass O&M, see also Master Comment Response 1.

O1, Lines 229-240

The DEIR does not predict a substantial increase in sediment deposition, as stated in the comment, nor does the Proposed Project propose sediment removal in the Tisdale or Sutter Bypasses. Sediment and debris removal for the Proposed Project would only occur in the Project footprint for the Proposed Project (DEIR Figure 2-2) to maintain fish passage conditions. Sediment maintenance in the Tisdale and Sutter Bypasses will occur as currently practiced, with or without the Proposed Project. DEIR page 3.7-21 states, "… the Proposed Project would not cause a significant increase in sediment deposition relative to existing amounts and would not require increased removal of sediment and debris compared to existing O&M

activities." Wood debris is also explicitly addressed in the DEIR (e.g., see DEIR Chapter 5, *Alternatives*, as well as Appendix J, *Engineering Feasibility Report*) and is not expected to be changed or substantially effected by the Proposed Project.

O1, Lines 241-248

Impact 3.7-2 in DEIR Section 3.7, *Hydrology*, and DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum,* address water quality impacts related to sedimentation. The Proposed Project would increase the volume of sediment deposited in the Tisdale Bypass by approximately 8–9 percent over approximately 10 years. As noted in Reponses O1-4, O1-24 and O2-25, for context, if all the additional sediment predicted to be delivered over a 10-year period as a result of the Proposed Project (approximately 136,000 cubic yards; see Tables 2 and 3 in Appendix H, *Sediment Budget Analysis Technical Memorandum,* of the DEIR) were to be spread over approximately 1,000 acres (which is only a small fraction of the Sutter Bypass area), it would equate to a depth of less than 0.08 feet. Even this relatively small depth value should be considered a very conservative estimate, as it is unrealistic to assume all the sediment delivered would be deposited and it is further unrealistic to assume that it would all be deposited over such a small area. For comparison, the combined bottom area of the Tisdale Bypass and the Sutter Bypass (that portion from the Tisdale Bypass downstream) is approximately 12,800 acres. DWR operates and maintains the Tisdale Bypass in accordance with California Water Code Section 8361 and this amount of expected deposition is within the historical range of sediment removed by DWR in the Tisdale Bypass through existing O&M activities. The DEIR therefore concludes that water quality impacts as a result of the release of sediment is not a significant impact under CEQA because the Proposed Project would generate a very small volume of sediment compared to the downstream area of delivery and the volume is within the range of existing conditions. The Proposed Project's incremental contributions to cumulative effects (in particular on receiving water quality from the release of sediment during operation) also would not be cumulatively considerable (Impact 3.7-7).

O1, Lines 249-280

The commenter states that increased inundation from Project facilities would affect agricultural production on lands within the Sutter Bypass. The DEIR evaluates the potential for increased inundation to lead to conversion of farmland to some other use. As explained in Response O1-03, the TUFLOW model results show that as a result of the Proposed Project, only 18 of the 115 farmland fields (approximately 1,026 of the 10,045 acres) in the Sutter Bypass (approximately 10 percent of fields) would experience a change in fallowing over a 22-year simulation period. Fallowing of fields/parcels occurs under existing conditions in the Sutter Bypass and

does not necessarily result in the field being permanently converted to non-agricultural use or a conflict with existing zoning or agricultural use or Williamson Act contracts. Therefore, it is not reasonably foreseeable with implementation of the Proposed Project that an increase of one to two years of fallowing over a 22-year time frame or increasing consecutive fallowing for one to two additional years would result in Farmland being converted to non-agricultural use or conflict with existing zoning or agricultural use or Williamson Act contract.

As it relates to the impact due to the change in fallowing resulting from the Proposed Project, the DEIR addresses potential impacts to agricultural production as a result of delayed planting, and the potential for subsequent land conversion to other non- agricultural uses and determined them to be less than significant (see Impacts 3.2-1 and 3.4-2 in DEIR Section 3.2, *Agricultural Resources*). All assumptions made in the DEIR analysis are more conservative than those stated in the comment (e.g., April 29 is the assumed ideal plant-by date and the last day to plant without fallowing is June 1). The commenter's statement regarding flooding and broader areas of inundation and the need for leveling land is speculative.

See also Master Comment Response 2 regarding TUFLOW model inputs; the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project; and the potential impacts with respect to agricultural resources.

The portion of the comment regarding rice yield, income, and crop insurance do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

O1, Lines 281-284

The commenter's statement is consistent with the methodology presented in the DEIR, which is more conservative than that noted by commenter (e.g., the DEIR analysis effectively assumes the yield loss is 100 percent if planting would not occur prior to June 1 in a given year and the associated

field[s] would be fallowed. Proposed Project effects on agricultural operations in the Sutter Bypass are further described in Master Comment Response 2.

O1, Lines 285-288

The Sutter Bypass is an engineered flood bypass system designed to periodically convey large amounts of water and sediment. Existing infrastructure and capacities must already contend with weir spill events and significant flooding well beyond the magnitude of additional flow attributable to the Proposed Project; the Proposed Project would not increase peak flows beyond those already encountered in the Sutter Bypass. The additional sediment (noted above in Responses O1-24, O1-25, and O1-27 and in the DEIR) and the additional wet days by parcel presented in the DEIR (Response O1-9) would not be significant.

For additional information on Sutter Bypass sediment and debris accumulation, see also Master Comment Response 1. See Master Comment Responses 2 and 3, respectively, regarding Proposed Project effects on agricultural operations and recreation in the Sutter Bypass.

O1, Lines 289-293

DWR appreciates the commenters' concerns and has ensured that the development of the EIR and analysis of the Proposed Project complies with CEQA. See Master Comment Response 2 regarding potential impacts to agriculture and Master Comment Response 3 regarding potential impacts to recreation from the Proposed Project.

A portion of the comment is directed towards economic impacts from the Proposed Project, which do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

O1, Lines 294-305

Responses O1-3, O1-4, and O1-21 provide information about impacts to agricultural and recreational uses associated with inundation and sedimentation to the fields in the Sutter Bypass.

A portion of the comment is directed toward economic impacts from the Proposed Project, which do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

O1, Lines 306-315

The DEIR does not conclude any potential impacts related to inundation or sedimentation are substantial; as stated in the comment. In the analysis of agricultural resources, the DEIR explicitly addresses the factors that the commenter is referencing, i.e., potential impacts to agricultural production as a result of delayed planting, and the potential for subsequent land conversion to other non-agricultural uses.

For additional information on Sutter Bypass sediment and debris accumulation, see also Responses O1-3 and O1-4 and Master Comment Response 1. See Master Comment Response 2 regarding Proposed Project effects on agricultural operations in the Sutter Bypass.

Flow easements and compensation are outside the scope of CEQA. No further response is provided on these topics because the issues do not address the adequacy of the environmental impact analysis in the DEIR.

O1, Lines 316-330

The portion of the comment regarding flow easements and compensation do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this

comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

O1, Lines 331-338 Information on the referenced court cases is noted. DEIR Section 1.1, *Purpose of the Environmental Impact Report* (page 1-1) states that the DEIR was prepared in conformance with CEQA (California Public Resources Code Section 21000 et seq.), as amended, and the *Guidelines for Implementing the California Environmental Quality Act* (State CEQA Guidelines) (California Code of Regulations Title 14, Section 15000 et seq.). Consistent with Section 15121(a) of the State CEQA Guidelines, the DEIR is a public information document that objectively assesses and discloses the potential environmental effects of constructing, operating, and maintaining the Proposed Project. It also identifies feasible mitigation measures and alternatives that would avoid identified adverse environmental impacts or reduce identified impacts to a less-than-significant level.

O1, Lines 339-343 See Response O1-36. Substantial, relevant information and analyses were presented in the DEIR and support all conclusions made with respect to Potential Project impacts on agricultural resources, hydrology and water quality, and recreation. Additionally, as related to comments on the NOP and the DEIR comment letter itself, assumptions made in the DEIR analysis are more conservative (e.g., the ideal plant-by date is assumed to be April 29 and the last day to plant without fallowing is June 1). See also Master Comment Responses 1–3.

O1, Lines 344-357 As documented in the DEIR and further explained in the responses to this comment letter, available information does not suggest that Project impacts would be substantial (as stated in the comment). See also Master Comment Responses 2 and 3 regarding the TUFLOW model development.

As explained in Response O1-13, the dashboard is a convenient, interactive means of querying, displaying, and summarizing a wide array of TUFLOW model output (which could serve multiple purposes). The "dashboard" tool was not intended for determining impacts of the Proposed Project under CEQA. All output from the model is not directly relevant to determination of significance under CEQA; the relevant output was used, per the approach and methodology described in DEIR Sections 3.2 and 3.8 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* to analyze the potential impacts of the Proposed Project under CEQA.

All relevant components of the TUFLOW model outputs, as viewed by the Dashboard and generally represented in Attachments A–F to this FEIR,

were available to DWR during preparation of the DEIR and were used in the CEQA analysis conducted to evaluate potential impacts to field/parcels within the Sutter Bypass from the Proposed Project.

The portion of the comment regarding flow easements and compensation do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

O1, Lines 358-363

As explained in Responses O1-13 and O1-38, the dashboard is a convenient, interactive means of querying, displaying, and summarizing a wide array of TUFLOW model output (which could serve multiple purposes). The "dashboard" tool was not intended for determining impacts of the Proposed Project under CEQA. All output from the model is not directly relevant to determination of significance under CEQA; the relevant output was used, per the approach and methodology described in DEIR Sections 3.2 and 3.8 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, to analyze the potential impacts of the Proposed Project under CEQA.

DWR will notify the commenter when responses to the DEIR comments are available for review.

O1, Lines 364-369

DWR will provide a copy of the Notice of Determination to the commenter. The contact information provide is noted.

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Comment Letter O2

CALIFORNIA FARM BUREAU FEDERATION
OFFICE OF THE GENERAL COUNSEL
2300 RIVER PLAZA DRIVE, SACRAMENTO, CA 95833-3293 • PHONE (916) 561-5665 • FAX (916) 561-5691

February 1st, 2021

Via electronic mail:
TisdaleWeirRehabProject@water.ca.gov

California Department of Water Resources
Division of Flood Management
Attn: Stephanie Ponce, Environmental Scientist

Re: Tisdale Weir Rehabilitation and Fish Passage Project Draft Environmental Impact Report, State Clearinghouse Number 2019049093, November 2020

Dear Ms. Ponce:

The California Farm Bureau is California's largest farm organization, working to protect family farms and ranches on behalf of its nearly 32,000 members statewide and as part of a nationwide network of more than 5.5 million members. Organized 100 years ago as a voluntary, nongovernmental and nonpartisan organization, it advances its mission throughout the state together with its 53 county Farm Bureaus.

The Sutter Bypass-Butte Slough Water Users' Association ("Water Users's Association" or "Association" hereinafter), representing some the owners and/or operators of some 5,000 acres of, predominantly, farm and rice land, within the Sutter Bypass, submitted comments on the Department of Water Resources ("Department")'s Notice of Preparation. In those comments, the Association raised myriad well-founded issues and concerns of the affected landowners, requesting that the Department evaluate and address these various concerns in the Draft Environmental Impact Report ("DEIR"). In the DEIR presently out for public review, the Department's analyses begin to address some of these concerns but often do so at an insufficient level of detail, while leaving many others unaddressed.

Importantly, for example, modeling of potential increased inundation frequencies, depths, and times, and potential related impacts on affected agricultural and recreational lands, as well as the related issues of increased sedimentation and debris, related agronomic issues, on-going operations maintenance issues and the like, is based on possible flawed or incomplete assumptions. Moreover, the DEIR analyses tend to focus in the immediate vicinity of the weir rehabilitation and fish passage project without adequately considering potential downstream effects in the bypass below, also failing to adequately convey the full extent and nature of the potential impact on individual parcels, as well as the upper extremes of the total range of potential effects considered.

While the DEIR characterizes all of these potential impacts as "less than significant" or "less than significant with mitigation" and within the historic range of effects, the actual practical impacts on individual landowners and operations are far from "less than significant"— in some cases,

perhaps substantially increasing the existing historic burden borne by these landowners under the existing flowage easements held by the state over these lands and, thus, requiring direct negotiation, consent and/or compensation as appropriate.

In other cases, the DEIR dismisses potential impacts—that are, again, far from "less than significant" from an actual, practical standpoint to the affected landowner—as "economic" effects not required to be addressed under CEQA, or as effects on productive high-quality bypass lands for rice production, but lands not required to be addressed under CEQA only because these lands are, perhaps, not technically classified as important farmlands and/or because they are lands not under a Williamson Act contract.

We submit that such analyses may look to meet only minimal legal and technical standards under CEQA, but that such an approach is, in itself, insufficient to build the type of good will and active partnership that is needed to make this and other similar and related projects work in the years to come. Landowners and adjacent local flood management agencies are not merely squatting on the land. In the case of the landowners, they have actual ownership of the land and certain rights, including the right to farm, subject only to the existing flowage easements on these lands. Moreover, in the case of both local contributions to on-going management, operations, and maintenance of the floodway and its associated facilities, these landowners and local management agencies are an integral part of a third- way partnership with their responsible state and federal counterparts.

To build and foster such a collaborative partnership, we encourage the Department to go above and beyond—both within the CEQA context of the immediate DEIR and beyond. Adequate impacts analyses, mitigation, adequate modeling, and thoughtful project design, for example, may take the Department part of the way towards a good faith, proactive effort to consider and adequately address various landowner concerns—but it won't take it all the way. For that, the Department will need full transparent sharing of information, to sit down with affected landowners and to hammer out a series of negotiated measures and commitments to address all reasonable concerns.

Similar to the Yolo Bypass below or to the Cache Slough Area beyond, for a smooth viable approach, there is more to do here than to merely dot the "i's" and cross the "t's." Without going this extra mile—particularly, when one considers the additive and cumulative, incremental effects of various much larger scale modifications to the State Plan of Flood Control system—progress over the long haul will be predictably slow and hard-won. This will mean less near- and long-term flood security for Valley communities and protected basins, less progress for fish, wildlife, and habitat, greater expense, further deterioration of rapidly aging legacy infrastructure, unmet long-term goals, reduced resiliency and long-term sustainability, etc. For all of these reasons, we recommend the Department view affected agricultural stakeholders and landowners as more than a check box on a form and instead view them, in the most positive sense, as neighbors, fellow solution finders and partners.

While this is our primary call upon the Department, regarding the DEIR, we would also like to share with the Department these additional comments:

1. Regarding the DEIR's 'Cumulative Impacts' analyses, we feel that the DEIR's definition of a reasonably foreseeable, connected project is unduly narrow. The DEIR, for example, limits its cumulative impacts analysis to just Sutter County—most significantly and consequentially, perhaps, excluding as overly speculative various connected long-term actions, both relating to the

Sutter Bypass itself (Phase 2 of the current project, for example) but also identified, on a larger scale, in the Department's Central Valley Flood Protection Plan ("CVFPP"). As a result of this truncation, the DEIR is able to dismiss various effects (for example, on agricultural resources, in the area of hydrology, drainage, sedimentation, inundation, etc.) as "less than significant" or "less than significant with mitigation." This, however, glosses over many significant, very legitimate long-term concerns of the landowners, viewing potential effects of the current action in isolation from much larger potential impacts of the same type with progressive implementation of various connected flood system modification actions over time.

2. Even if the Department continues to maintain that generally known, connected elements of the Department's CVFPP are overly speculative and insusceptible of at least a qualitative look in the DEIR cumulative impacts analyses, it would nonetheless seem quite evident that the current project is, at least, a sub-component and a step in the Department's long-term implementation of the larger CVFPP. As such, it is unclear why the DEIR does not expressly purport to tier from the existing Programmatic EIR for the CVFPP ("CVFPP PEIR"). The PEIR, for example, adopted various potential environmental impacts of the proposed CVFPP and adopted certain programmatic mitigation measures with respect to agricultural resources among others, several of which could be relevant and quite useful in connection with the current project. For some unexplained reason, however, those programmatic mitigation measures are neither referenced or incorporated.

3. Regarding the DEIR's references to possible compensatory mitigation under "Biological Resources" (for example, with respect to Valley Elderberry Longhorn Beatle or riparian forest), we are concerned that such mitigation, if on-site, could impose additional burdens or potential reduce flood conveyance capacity in the bypass below. The DEIR does not adequately address this potential impact.

4. Regarding 'economic' impacts or other impacts allegedly not requiring an impacts analysis or mitigation under CEQA, in terms of agricultural resources and the local economy particularly, we urge the Department to consider the "agricultural sustainability" elements included in the local management agencies' Regional Flood Management Plan ("RFMP"). Additionally, we urge the Department to consider potentially relevant elements from the Agricultural and Land Stewardship Framework and Strategy identified by the Department's Agricultural Land Workgroup in 2014 and later compiled by the 2018.

In closing, the California Farm Bureau thanks the Bureau for the opportunity to offer these public comments on the DEIS for the proposed Tisdale Weir Rehabilitation and Fish Passage Project. Questions regarding this correspondence may be directed, as an initial point of contact, to the undersigned, Justin Fredrickson at 916-561-5673 or jfredrickson@cfbf.com.

Sincerely,

Justin Fredrickson
Environmental Policy Analyst

Letter O2 Response	California Farm Bureau Federation, Justin Fredrickson, Environmental Policy Analyst February 1, 2021

O2, Lines 10-14 The comment describes the organization and purpose of the California Farm Bureau Federation. The comment is noted.

O2, Lines 15-23 The comment references the comment letter submitted by the Sutter Bypass–Butte Slough Water Users' Association on the NOP. Responses to specific concerns are addressed in Responses O2-3 through O2-9.

O2, Lines 24-28 The comment states that modeling of potential increased inundation frequencies, depths, and times, and sedimentation and debris and the associated impacts on affected agricultural and recreational lands was based on flawed or incomplete assumptions. The DEIR provides adequate information that describes the modeling assumptions and results that describe the frequency, extent, and duration of inundation of fields in the Sutter Bypass with implementation of the Proposed Project. The DEIR also presents adequate analysis evaluating the impacts to agricultural and recreational uses associated with inundation and sedimentation to the fields in the Sutter Bypass. The comment does not provide any specific examples of how the modeling is based on flawed or incomplete assumptions. All assumptions for the analyses of potential Project impacts on agricultural resources and recreation are stated in the DEIR (e.g., DEIR Appendix C). These assumptions are based upon the best information and data available.

To determine the potential operational impacts of the Proposed Project (e.g., additional flows resulting from the Proposed Project), the DEIR first established the baseline (existing conditions) of the Sutter Bypass by simulating conditions for 22 water years, including a variety of WY types as categorized by water year typology based on the Sacramento Valley Water Year Index (e.g., Wet, Above Normal, Below Normal, Dry, and Critical) without the Proposed Project. This baseline information includes existing flow frequency, duration, and timing and magnitude (water depths and extents) in the Sutter Bypass which, depending on the year, currently results in fallowing of agricultural fields and/or impacts to recreational use within the Sutter Bypass (e.g., use of duck hunting clubs).

As described on page 3 in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR, and as described on page 3.2-8 in Chapter 3.2, *Agricultural Resources*, of the DEIR, a coupled one-dimensional/two-dimensional hydrodynamic model of the Tisdale and

Sutter Bypasses using the HPC commercial software package TUFLOW was developed to analyze hydrology and hydraulics under existing and Project conditions and to quantify any changes in inundation downstream in the Sutter Bypass that could result from the Proposed Project.

The flow frequency, duration, and timing and magnitude (water depths and extents) in the Sutter Bypass was built into the analysis and TUFLOW model (see Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, of the DEIR). Results were reported at the field and parcel scale and at the scale of the entire Sutter Bypass (e.g., 30 percent of the individual field/parcel must be inundated at a depth of at least 0.1 feet to be considered wet and the calculation is made for all fields and parcels, individually, throughout the Sutter Bypass). Analysis related to agriculture was completed at the field scale (increasing resolution of potential issues related to last day wet and planting). Analysis related to Williamson Act lands and recreational resources was completed at the parcel scale where generally large areas coincide with or are on a similar scale as mapped parcel boundaries (e.g., the field scale is generally no longer relevant to these land uses/designations).

For each year in the recreation (waterfowl) season (September 28–February 12) and agriculture season (March 1–June 30) within the 22-year analysis period (WY 1997– 2018), the TUFLOW model was used to determine whether that unit area was "wet" (see definitions below). This allowed analyses to calculate the number of wet days for each parcel under existing conditions or, for the agricultural season, the TUFLOW model was used to identify the last day wet for each field.

DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis* (Section 3.1, Methods, page 14), states that the primary variable behind the analysis is the incremental difference in location, duration, and frequency of additional wetted area in the Sutter Bypass between existing and Proposed Project conditions during the assumed agricultural preparation and planting period (March 1 through June 30). Based on an understanding of current agricultural practices within the Sutter Bypass, the following variables were calculated and the following assumptions were adopted in the modeling analysis of potential Project impacts on Farmland (Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, page 16):

– Last Day Wet—defined as the date the ground is considered to be dry enough for tractors to chisel fields. This is assumed to occur when 70

percent or more of the field is dry (Reclamation and DWR 2019), as computed by the TUFLOW model at the end of a given day.

– Drying and Preparation Period—defined as the sum of additional days to reflect (1) the necessary assumed drying time before field preparation begins, and (2) an assumed field preparation period.

– Planting Date—defined as the Last Day Wet plus the Drying and Preparation Period. The later the planting date, the greater potential for decreases in agricultural yield.

– Agricultural Field Preparation and Sowing Period—defined as March 1 through June 30 (based on Reclamation and DWR 2019).

The topography used in the TUFLOW model represented the best available contiguous, contemporary data set for the entire model domain (i.e., the Tisdale and Sutter Bypasses), and this included enforcement of "breaklines" for representing smaller agricultural berms (as noted in DEIR Appendix C, page 10) as well as the delineation of active agricultural fields (as noted in DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* page 15). This representation of the existing topography and drainage within the Tisdale and Sutter Bypasses is the most current contiguous data set and was more than sufficient for the purpose of the analysis, which is to make a relative comparison of existing and Project conditions and determine the potential impacts of the Proposed Project relative to CEQA significance criteria.

See also Master Comment Responses 2 and 3 regarding the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources and recreation, respectively.

The potential impacts of the Proposed Project on sedimentation within the Tisdale Bypass and areas downstream (including the Sutter Bypass) were analyzed and addressed in the DEIR (Section 3.7, *Hydrology*; Chapter 5, *Alternatives*; and DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum*). As noted in Impact 3.7-3 in DEIR Section 3.7, Hydrology, and DEIR Appendix H *Sediment Budget Analysis Technical Memorandum,* the Proposed Project would increase the volume of sediment deposited in the Tisdale Bypass by approximately 8–9 percent over approximately 10 years; this amount of expected deposition is within the historical range of sediment removed by DWR through existing O&M activities. Additionally, with some degree of sediment removal anticipated to occur annually within

the footprint of the Proposed Project (DEIR Figure 2-2) to maintain fish passage conditions, no significant increase in sediment deposition relative to existing amounts would occur and the Proposed Project would not require increased removal of sediment downstream in the Tisdale Bypass compared to existing O&M activities (DEIR page 3.7-21). For additional information on sediment/debris accumulation and movement in the Tisdale and Sutter bypasses from operation of the Proposed Project, see Master Comment Response 1.

The comment regarding agronomic issues does not constitute or contribute directly or indirectly to an effect on the physical environment. State CEQA Guidelines Sections 15131(a) through 15131(c) provide guidance on the discussion of economic (and social) effects in an EIR. Specifically, such effects may be included in an EIR but "shall not be treated as significant effects on the environment." However, economic and social effects may be used to determine the significance of physical changes caused by a project, but these changes "need not be analyzed in any detail greater than necessary to trace the chain of cause and effect." Any economic impacts from the Proposed Project would not constitute or contribute directly or indirectly to an effect on the physical environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed

Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

O2, Lines 28-32 The DEIR does include an analysis of flow impacts in the Sutter Bypass and the flow frequency, duration, and timing and magnitude (water depths and extents) in the Sutter Bypass was built into the analysis in the TUFLOW model (see Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR). Results were reported at the field and parcel scale and at the scale of the entire Sutter Bypass. The TUFLOW model captured all lands within the Sutter Bypass that have the potential to be affected by operation of the Proposed Project as shown on Figure 3 in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR. See also Response O2-3 and Master Comment Responses 2 and 3.

O2, Lines 33-38 The opinion expressed by the commenter that Project effects within the historic range of effects would be far from less than significant for individual landowners and operations is noted. DWR acknowledges the existing challenges of farming and maintaining hunting blinds within an engineered flood bypass system designed to periodically convey large amounts of water and sediment. Land use activities within a floodway are inherently more constrained than for otherwise similar activities on the land side of a levee.

The portion of the comment regarding flow easements and compensation do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

O2, Lines 39-44 The comment is directed toward economic impacts from the Proposed Project, which do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

The TUFLOW model captured *all lands* within the Sutter Bypass that have the potential to be affected by operation of the Proposed Project as shown on Figure 3 in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR. See also Response O2-3 and Master Comment Responses 2 and 3.

O2, Lines 45-54 This comment does not raise an issue under CEQA. DWR appreciates the commenters' concerns and has ensured that the development of the EIR and analysis of the Proposed Project complies with CEQA, and it will comply with all applicable legal requirements for the implementation of the Proposed Project. No further response is required.

O2, Lines 55-62 This comment does not raise an issue under CEQA. DWR appreciates the commenters' concerns and has ensured that the development of the EIR and analysis of the Proposed Project complies with CEQA, and it will comply with all applicable legal requirements for the implementation of the Proposed Project. No further response is required.

O2, Lines 63-73 This comment does not raise an issue under CEQA. DWR appreciates the commenters' concerns and has ensured that the development of the EIR and analysis of the Proposed Project complies with CEQA, and it will comply with all applicable legal requirements for the implementation of the Proposed Project. No further response is required.

O2, Lines 74-87 The DEIR presents an appropriate range of reasonably foreseeable projects for the cumulative impact analysis. As discussed in DEIR Section 4.1.2, *Criteria for Identifying Related Projects in the Project Area*, the list of past, present, and reasonably foreseeable future projects was developed based on specific criteria. Reasonably foreseeable projects include projects that have been defined in adequate detail to assess potential impacts and project that are funded and have acquired regulatory permits.

There is not a Phase 2 of the current Proposed Project, as stated in the comment. Draft EIR Section 4.1.2 notes that DWR is funding regional flood management plans in support of the Central Valley Flood Protection Plan, including the Mid and Upper Sacramento River Regional Flood Management Plan, and is assessing regional flood management such as future management of the Tisdale and Sutter Bypasses to sustain flood conveyance and reduce flood risk, improve floodplain habitat, and support sustainable operations and maintenance practices. However, as stated in the DEIR, future multi-benefit actions and projects in the Tisdale and Sutter Bypasses by DWR and others are speculative at this time and are not evaluated in the DEIR because they do not meet the definition of a reasonably foreseeable project, as outlined by the criteria in DEIR Section 4.1.2.

O2, Lines 88-98 The Proposed Project is consistent with the Central Valley Flood Protection Plan (CVFPP) and associated CVFPP Conservation Strategy as it contributes to the attainment of the CVFPP goals, specifically focusing on

the improvement of ecosystem quality, quantity, function, and sustainability within the State Plan of Flood Control. DWR has undertaken a project-specific analysis for the Proposed Project and did not rely upon or tier from the CVPPP Program EIR.

O2, Lines 99-103

The commenter expresses concern that the mitigation measures recommended for biological resources in the DEIR could impose additional burdens or potentially reduce the flood conveyance capacity of the Sutter Bypass. Mitigation Measure 3.4-12b was written with the expectation that mitigation for loss of riparian vegetation from the Proposed Project would occur on-site. The on-site vegetation planting approach is to maximize the compensation for any localized, temporal loss of riparian forest stemming from vegetation removal necessary during construction.

Nevertheless, as also stated in the same mitigation measure, mitigation options also being considered by DWR include credits from an approved off-site bank (e.g., advanced mitigation at Colusa Sacramento River Recreation Area). Therefore, potentially all mitigation for loss of riparian vegetation under the Proposed Project may ultimately occur at an off-site location.

The Proposed Project has been designed to protect the integrity of the Tisdale Weir and Bypass, and as stated in DEIR Section 3.7, *Hydrology and Water Quality*, would not affect the operation of the Sacramento River Flood Control Project facilities or increase the risk of flooding. It is recognized that any on-site planting of woody vegetation should be placed in a manner which does not adversely affect hydraulics within the Sacramento River of Tisdale Bypass or the functionality of system to direct flood flows into the flood bypass system. As described in DEIR Chapter 4, *Project Description*, DWR is expecting to obtain a Flood Encroachment Permit from the Central Valley Flood Protection Board, pursuant to California Code of Regulations Title 23. Therefore, DWR will be required to submit detailed analysis for impacts the Proposed Project will have on flood conveyance, including the implications of any vegetation that DWR plants on-site. The DEIR language in Mitigation Measure 3.4-12b will be revised to explain that the siting of any woody vegetation on-site planting implemented by DWR pursuant to compensatory mitigation for loss of riparian vegetation would be subject to review by the Central Valley Flood Protection Board to ensure the plantings do not have an adverse effect on upstream or downstream flood risk.

O2, Lines 104-110 This comment does not raise an issue under CEQA. DWR appreciates the commenters' concerns and has ensured that the development of the EIR and analysis of the Proposed Project complies with CEQA, and it will comply with all applicable legal requirements for the implementation of the Proposed Project. No further response is required.

O2, Lines 111-114 DWR thanks the California Farm Bureau Federation for its comments on the DEIR for the Proposed Project. The contact information for the California Farm Bureau Federation is noted.

Comment Letter I1

From: Francis Coats
To: DWR Tisdale Weir RehabProject
Subject: Tisdale weir project
Date: Saturday, November 21, 2020 7:33:12 PM

Please remember to consider the effect of the project on public access to and use of the Sacramento River and the Tisdale bypass; and, refrain from any action which would impair public access and use when feasible and to the extent feasible.

In addition please remember that members of the public have a right to be on state-owned land to fish, and formerly state-owned land conveyed out of state-ownership after November 8, 1910 to fish. Some of the lands in the basin were subject to tax sales, which involved transfer into state ownership, after 1910.

Please be sure to provide this consideration in a public and transparent, and coherent manner.

Francis Coats
3392 Caminito Avenue, Yuba City, Ca 95991;
fecoats@msn.com;
(530) 701-6116

Sent from my Verizon, Samsung Galaxy smartphone
Get Outlook for Android

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Letter I1 Response	Francis Coats November 21, 2020

I1, Lines 5-7 The Proposed Project's effect on public access is described in DEIR Section 3.8, Recreation. Impairment of public access to and use of the Sacramento River and the Tisdale Bypass within the project footprint (shown in DEIR Figures 2-2 through 2-4) would be minimized to the extent feasible. Specifically, the existing parking lot west of Tisdale Weir provides access to the Sutter Bypass Wildlife Area and the Tisdale Boat Launch Facility (with access to the Sacramento River). The Proposed Project could directly affect recreational access to these areas within the project footprint by requiring the temporary closure of areas where construction activities would occur. Portions of the eastern edge of the parking lot would be blocked off to public access during construction; as noted in DEIR Chapter 2, *Project Description,* construction workers would manage the flow of vehicles maneuvering in and out of the parking lot. The boat ramp is anticipated to remain open during construction of the Proposed Project.

I1, Lines 8-11 The Proposed Project would not affect the public's access to State-owned land for fishing, with the exception of limited construction activities within the project footprint, as described in Response I1-1.

I1, Lines 12 DWR appreciates the comment. Both the DEIR and FEIR, which include comments received on the DEIR and responses to comments, have been made available to the public online on DWR's website (https://water.ca.gov/Programs/Flood-Management/Flood- Projects/Tisdale-Weir) and on the State Clearinghouse's website (https://ceqanet.opr.ca.gov/), as well as through newspaper and electronic notices.

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Comment Letter I2

MR. GETTLEMAN: We'll start the clock for you.

MS. BRADFORD: Okay. So I represent the Krepps (phonetic) Farm, which is in the Sutter Bypass. Our property is just east of the Tisdale Canal. And so we will be, clearly, affected by all of this.

We are interested in how the farm will be affected, both by the sediment removal project -- in 2007,when there was the previous sediment removal project, we ended up with lots of sediment on our farm, which had to be moved, graded. And, of course, we're interested in the additional water that will come on and may delay planting for us.

So those are our concerns. Whether we address them here or later, just wanted to get in a comment.

MR. GETTLEMAN: Okay. Thank you for your comment, Julie.

(Background Colloquy)

MR. GETTLEMAN: Okay. Christopher Huitt. Let's un-mute Christopher and then we'll set the clock.

Why don't you try to speak, Christopher, and make sure we can hear you?

MR. HUITT: Hey Ben. Good talking to you again. It's been a long time.

MR. GETTLEMAN: Hey. How are you doing? Okay. We'll start the clock.

California Reporting, LLC
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Letter I2 Response **Creps Farm LLC, Julie Bradford**
December 8, 2020 Public Meeting Comment (transcript page 16)

I1, Lines 2-9 The potential sediment-related impacts of the Proposed Project to areas downstream of the Tisdale Weir, including the property referenced by the commenter, are addressed in the DEIR. The additional volume of sediment that may be delivered to the Tisdale Bypass (and ultimately the Sutter Bypass) as a result of the Proposed Project is, in any given year or even considered cumulatively, a very small volume of sediment compared to the downstream area of delivery. Impact 3.7-3 in DEIR Section 3.7, *Hydrology*, and DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum*, addressed the potential for increased sedimentation as a result of the Proposed Project and concluded that about an 8–9 percent increase in sediment deposition could occur over 10 years, which is within the historical range of sediment removed by DWR in the Tisdale Bypass through existing O&M activities. For context, if all the additional sediment predicted to be delivered over a 10-year period as a result of the Proposed Project (approximately 136,000 cubic yards; see Tables 2 and 3 in Appendix H, *Sediment Budget Analysis Technical Memorandum*, of the DEIR) were to be spread over approximately 1,000 acres (which would represent something similar to the Creps property and only a small fraction of the Sutter Bypass area), it would equate to a depth of less than 0.08 feet. Even this relatively small depth value should be considered a very conservative estimate, as it is unrealistic to assume that all the sediment delivered would be deposited and it is further unrealistic to assume that it would all be deposited over such a small area. For comparison, the combined bottom area of the Tisdale Bypass and the Sutter Bypass (that portion from the Tisdale Bypass downstream) is approximately 12,800 acres.

For additional information on sediment accumulation and movement in the Tisdale and Sutter Bypasses from operation of the Proposed Project, see Master Comment Response 1.

The 2007 sediment removal project was a different project, independent from the Proposed Project, and was subject to its own environmental review (Tisdale Bypass Channel Rehabilitation Project 2007 IS/MND, State Clearinghouse Number 2007022044) and permitting processes. The DEIR analyzed the Tisdale Weir Rehabilitation and Fish Passage Project (the Proposed Project).

I1, Lines 10-13 Property-specific analyses (both at the parcel and field scale) are provided for flow- related impacts in the DEIR. In the analysis of agricultural resources (DEIR Section 3.2, *Agricultural Resources*), the DEIR explicitly addresses potential impacts to agricultural production as a result of additional flows and delayed planting.

TUFLOW model output for water depth, which underlies the analysis presented in the DEIR, is included as Attachments A through E). Information specific to the Creps parcels is also summarized and presented separately in Letter I4 Response, Figures 1 through 5, and the predicted change in the number of wet days was relatively small:

– Over the 22-year model simulation, the analysis predicted one additional year of fallowing compared to existing conditions for 11 of the Creps fields (out of the total 15 for all of the Sutter Bypass) and two additional years of fallowing for one of the Creps fields (out of the total three for all of the Sutter Bypass) as a result of Project operation.

– Among the Creps fields, in many years (over half) the predicted change in wet days (a wet day being a measure of flooding) during the agricultural season would not result in a noticeable change, as the given field either remains dry under both conditions (Project and existing) or is already temporarily fallowed under existing conditions.

– For the remaining years, the vast majority of the predicted changes are less than or equal to four additional wet days during the assumed 121-day-long agricultural preparation and planting period.

– Collectively, over 90 percent of the predicted change (considering each Creps field and each year simulated) is either not noticeable or less than or equal to four additional wet days during the assumed 121-day-long agricultural preparation and planting period. Thus, most of the predicted change in the number of wet days was relatively small and would not result in additional flooding extending deep into the planting season.

See also Master Comment Response 2 regarding the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources.

Comment Letter I3

as a follow-up, Chris.

MR. HUITT: That's fine. I'll talk to Jeff and Stephanie and Justin and the folks at ESA whenever they propose to do that. It's pretty interesting. I'd like to know how it's going to be done.

MR. GETTLEMAN: Sure. Yeah. Sounds good. Thank you, Chris.

MR. HUITT: Thanks Ben. Appreciate it.

MR. GETTLEMAN: Yup.

(Pause)

MR. GETTLEMAN: Okay. It's looks like Jon Munger has his hand raised, so let's get Jon un-muted.

Jon, can you -- do you want to try to speak?

MR. MUNGER: Yes, Ben. Can you hear me okay?

MR. GETTLEMAN: Yes, we can. Go ahead, Jon.

MR. MUNGER: Great. Good morning. Jon Munger here with Montna Farms. We're a landowner in the Sutter Bypass, also President of the Sutter Bypass Butte Slough Water Users Association. And we'll be making comments via written comments, similar to what we did for the NOP process, so wanted to let you know that.

And just wanted to know if there ever will be an opportunity during this process for DWR to provide some sort of demonstration on the two-flow modeling to give the landowners a better understanding of what that modeling

does and show the effect on properties? Or is that model going to become public at some point? Just would like, at some point, to throw that out there. I think there are landowners that are interested in hearing that and seeing more.

MR. GETTLEMAN: Okay. Thank you, Jon.

(Pause)

MR. GETTLEMAN: Just for the folks who are still on the webinar, we're going to be keeping this line open for public comments until noon, but we're not planning on sharing any more slides or information for today's meeting. So, again, we're certainly interested in receiving comments but that's pretty much what we're going to be doing from now until 12:00. I just wanted to make sure people understand that.

(Pause)

MR. GETTLEMAN: Okay. So we're right about at the hour here. And thank you, everyone, again for staying on here.

Again, maybe, Zach, you could just quickly go to the public comment slide, or how people can send in their comments? I just want to make sure people have that. Yeah.

So, again, DWR is accepting comments through January 15th. This is the information to send it in. And

Letter I3 Response	**Montna Farms, Jon Munger** December 8, 2020 Public Meeting Comment (transcript pages 18 and 19)

I3, Lines 16-22	DWR thanks Montna Farms for its comments on the DEIR.
I3, Lines 22-30	The comment is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

Comment Letter I4

JULIE L. BRADFORD

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February 1, 2021

California Department of Water Resources, Division of Flood Management Attn: Stephanie Ponce, Environmental Scientist
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TisdaleWeirRehabProject@water.ca.gov

Director Karla Nementh
California Department of Water Resources
1416 Ninth Street,
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Re: Comments on Tisdale Weir Rehabilitation and Fish Passage Project Draft Environmental Impact Report (State Clearinghouse No. 2109049093) & Request for CEQA Notice

Dear Director Nemeth and Ms. Ponce,

On behalf of the Creps Farm LLC, I am submitting these comments on the draft environmental impact report (DEIR) for the Department of Water Resources" (DWR's) proposed Tisdale Weir Rehabilitation and Fish Passage Project (Project). I also am requesting that DWR provide me with any Notice of Determination (NOD) filed for the Project.

The Creps Farm will be directly and significantly affected by the DWR's Tisdale Project as it is located exactly at the confluence of the Sutter Bypass and the Tisdale Canal, and most of the farm lies south and downstream of the canal.

Our 1,200 acre farm has been in my family for 115 years. It was purchased by my great grandmother Matilda Creps in 1906. Matilda, a widow with 7 children, managed the family cattle ranch in Yuba County and needed summer grazing land for her herds. She purchased what was at the time a seasonal floodplain that produced abundant grass in the summer. The Creps farm has remained essentially intact since then, despite numerous government interventions over the years. For nearly 80 years, this bypass property has been continuously farmed for rice. The farm is owned by four of Matilda Creps' grandchildren and supports 12 families through rice farming. We hold leases with 2 farmers and lease the property to a duck club. Our club, the Sutter Basin Duck Club (SBDC), has been in continuous operation on our property since 1920, with a unique history, and just celebrated its 100 year anniversary. Our goals are to continue rice farming and continue operation of the duck club. My family enjoys a long legacy as responsible stewards of this beautiful property where rice is farmed and wildlife is abundant under the backdrop of the Sutter Buttes.

I have attached a more detailed history of the Creps Farm and the government forces acting on it since 1906 (Attachment 1). Also attached is a map of the Creps Farm (Attachment 2).

My uncle, David Creps farmed and managed the Creps Farm for over 60 years. David died in April 2020 at the age of 92. As trustee of David's trust, I am manager of the newly formed Creps Farm LLC and will address our comments, concerns and questions on Tisdale Weir Rehabilitation and Fish Passage Project DEIR. My comments are informed by John Marler, who has farmed rice on the Creps Farm for over 30 years and continues our farming tradition, and Jim Evans, who manages the SBDC.

We have some basic questions about the operation and construction of the notch:

- Has a smaller notch been considered?
- Can the notch be opened and closed? If so, can the notch be closed to reduce flooding in the Sutter Bypass during critical farming periods?
- How will sediment carried down the Tisdale Canal and deposited in the Sutter Bypass be removed?
- How will farmers and duck club operators be compensated for additional work or lost revenue sustained as a result of the Project?

Because of our unique location at the mouth of the Tisdale Canal, inside the Sutter Bypass, our farm receives immediate and significant impacts of any activity affecting the Tisdale Weir and Canal.

- Additional water coming through the weir could potentially flood our farm for multiple years deep into the planting season and render our farm fallow. According to the DEIR, the maximum number of consecutive years our farmland may be rendered fallow are predicted to double.
- If we are forced to plant late in the season due to excessive flooding, our rice yields will suffer and the income of 12 families will be at risk.
- If the increased water results in multiple years of flooding, we may be denied crop insurance.
- Excessive flooding will limit access to our duck club. If blinds and roads are submerged, they will require costly repairs. The continued operation of the duck club is at stake.
- Excessive deposits of sediment and debris carried down the Tisdale Canal and deposited on our property require that we move sediment and debris and re-level our fields every year.
- Sediment and debris blocks roads which must be re-leveled and is deposited in hunting blinds which must be dug out and repaired. We anticipate sediment and debris deposits to increase with the Project.
- Any increase in frequency, extent, and duration of water, sediment and debris flowing to our farm will directly and adversely affect our farming and duck club operations.
- The project exceeds the scope of our existing flow easements.
- How will we be compensated for Project impacts that have a significant potential to affect our economic health?

Although we have carefully studied the DEIR and participated in numerous meetings held by DWR, we have received insufficient information to fully understand how this project will affect our farm. The "Last Wet Day" analysis is not enough to know how our farm will be affected by

the additional water coming through the notch. The DEIR is incomplete and fails to address our concerns.

DWR has designed and produced a critically important "Dashboard" tool to determine how the proposed notch in the Tisdale Weir will affect each field in the Sutter Bypass downstream of the Tisdale Canal. Naturally, we are anxious to use this tool to learn how the proposed Project will affect our farm, our livelihood and our way of life. As of this writing, we have been denied access to the Dashboard tool. We are left to assume the worst: our property will be flooded and rendered fallow. We are told the Dashboard will be released when "Real Estate Processes" are discussed after the CEQA process. We fail to see the justice of this decision and respectfully request that the Dashboard information be released with sufficient time to understand the results before approval is granted for the Project.

The Creps Farm LLC is a member of the Sutter Bypass-Butte Slough Water Users' Association. Kelley M. Taber, attorney with Somach, Simmons & Dunn, represents our Association and has provided a 2/1/2021 letter to you with a thorough outline of specific and technical comments addressing our collective Association concerns regarding the DEIR. The following concerns are specific to the Creps Farm.

I. The DEIR's Impact Assessment Methodology and Assumptions are Inadequate and Unsupported, and Insufficient Information Has Been Provided to Us to Permit Meaningful Evaluation of Project Impacts.

A. The DEIR's Use of Long Term Average Data, and General Conclusions about Impacts within the Sutter Bypass as a Whole, Obscures the Nature and Extent of Project Impacts

See Association's comments regarding faulty methodology.

The DEIR reports the Project will temporarily affect approximately 10 percent of Sutter Bypass farmland fields with the increase of water flowing through the notch. This is referred to as a "relatively small predicted change" and concludes that our farmland would not suffer any significant impact. We disagree with this characterization. There are additional forces to be considered in this analysis that are not represented. When there is additional water coming down the Tisdale Canal, even a 10% change can have significant impacts due to timing or system overload. Here are a few examples of when "a small percentage change" could leave our farm unable to grow a rice crop or continue hunting operations:

- If a storm occurs late in the season (as happened in 2011, 2017), after we have planted rice, a late season storm resulting in 10% water inundation could wipe out our newly seeded fields.
- If the west Sutter Bypass canal cannot handle the additional water coming from the Tisdale Canal, it may overflow its eastern banks, flooding our fields.
- Our hunting fields have been flooded in the past when water spills onto our fields from the eastern bypass canal before the Tisdale even begins to run. An additional 10% inundation coming from the Tisdale could close hunting operations.

B. Impacts May Vary Based on Location within the Sutter Bypass; Property-Specific Analysis Are Needed to Understand the Nature and Extent of Project Impacts

Because our property is located at the mouth of the Tisdale Canal at the northern end of the southern Sutter Bypass, we receive the brunt of Tisdale water events. We receive the most water flowing from the Tisdale Canal into the Sutter Bypass and we receive excessive sediment and debris flowing from the Tisdale into the Sutter Bypass. The Creps Farm represents the property in the Sutter Bypass most impacted by any changes to the weir.

Water from the Tisdale arrives on our property first and flows through our fields to properties below. The Gilsizer Slough runs east to west below our southern boundary and collects runoff at that point. Our property has unique characteristics that must be studied to determine specific effects of the Project on our farmland. Fields have high and low points, there is a downhill grade toward the west, drainage differences, sediment and debris deposits, etc. require specific analysis.

As noted in response to I A. above, there are unique and interrelated characteristics and situations that alter the results according to specific fields and overall property characteristics.

As mentioned earlier, DWR has designed and produced a critically important "Dashboard" tool to determine how the Project will affect each field in the Sutter Bypass downstream of the Tisdale Canal. This Dashboard was demonstrated in a January 15, 2021 meeting. Unfortunately, this tool is being withheld from us. The general information provided in the DEIR does not address specific land characteristics and is insufficient and misleading.

C. Model Inputs Must Reflect Current Conditions

The 2008 LiDAR elevation survey used for analysis of current conditions may not reflect current topography. We have learned 2018 LiDAR data has been collected for a survey that is waiting to be processed. This additional elevation survey could more accurately reflect current conditions.

The 2020 DWR Tisdale Sediment Removal Project has recently changed the characteristics of the Tisdale Canal. The sediment disturbed during the process is likely to result in excessive sediment being carried downstream to the Creps Farm, as it was in 2008. We believe sediment changes should be addressed by the DEIR.

D. More Information About TUFLOW Model Results is Needed to Understand the DEIR Impact Analysis

The DEIR does not describe the additional flow, frequency, duration and effect on water levels in the Sutter Bypass when the notch is open. We cannot learn this information from the existing TUFLOW model.

There is a reference to specific increased "Last Day Wet" by field contained in DEIR Appendix C, Figures 9 and 10, pages 25 and 26 of the TUFLOW Model Results and CEQA Impacts Analysis. Our farm is featured prominently in this model. Based on our knowledge of our farm, this analysis appears incorrect.

In the "Last Day Wet" report, the Creps Farm's northernmost fields are referred to as Fields 0 -6. In this analysis, the Project would have added 58 - 59 days of water to Fields 0 - 6 in 2011. Based on this projection, our fields would have been flooded until late June, long beyond the time when we can successfully plant rice. We know fields 0 - 6 to be the first to receive water and the first to have the water drain to the south and west/east. Yet, the analysis reports that during the same year of 2011, a field further south and east (#13 in the report and our smallest field) will only have two

additional wet days and be free of water by April 28. This seems unlikely to us based on our experience and familiarity with on the ground conditions. Thus we are concerned that the model does not reliably or accurately predict potential Project impacts.

In this same analysis, the routinely wettest fields on our property (identified as 15, 16, 81, 82) which are 8 feet lower than any other location on our farm, report only 1 - 2 additional wet days. This is perplexing to us. On closer analysis, the data for these fields was projected for five different years (1999, 2000, 2011, 2012, 2016). How can we possibly draw conclusions from an analysis that compares data from five separate years in fields that differ in elevation, drainage and proximity to the canal?

The DWR TUFLOW analysis in DEIR Appendix C only presents seemingly random years, even though DWR's Dashboard tool is available to evaluate a much broader spectrum of annual water level impacts by specific field. In spite of multiple requests, DWR has withheld access to the critical Dashboard tool, effectively undermining our ability to provide comprehensive review of the impacts to our farm.

E. DWR Must Make Its Project Effects "Dashboard" Tool Available to Landowners

To adequately evaluate the impacts of the additional water flowing through the notch to our farmland and specific effects on specific fields, we need a reasonable period of time to use the Dashboard tool. The Dashboard tool is needed to see how differing water conditions will affect our ability to farm our specific fields and maintain our duck club during specific weather conditions in specific years.

Lacking access to the Dashboard, which has been inexplicably withheld, we have been unable to evaluate the accuracy and credibility of the DEIR's analysis and determinations about impacts to agriculture and duck club operations. Based on its refusal to share the Dashboard tool, it appears DWR has deliberately limited our ability to comment.

F. The DEIR Does Not Contain Sufficient Information to Support its Reliance on the Tisdale Bypass "Hinge"

The "Hinge" is essentially a hill of sediment in the Tisdale Canal between the Weir and our farmland. This Hinge is slightly lower than the weir and slows the passage of water in high water events. If this Hinge were to fail, our farm would receive additional excessive floodwaters. The DEIR does not explain how the Hinge will be monitored and maintained.

II. The DEIR Does Not Adequately Evaluate and Mitigate Potentially Significant Impacts to Sutter Bypass Agriculture and Recreation from Increased Flooding

A. The DEIR Does Not Provide Sufficient Information About Project Effects on Water Levels or Related Impacts to Potentially Significant Historic Resources

We need an analysis of water levels to understand the impact to both our farming and duck club operations. Ideal water levels for waterfowl in general are believed to be 18 inches. However, on our farm, where some fields are as much as 8 feet lower than other fields, we must maintain our water depth between 8 - 11 inches. If our fields are flooded beyond 11 inches, access to roads will

be affected, some blinds will be flooded and unusable, and access to other, higher blinds will be severely limited. All of these factors influence the desirability of the club and its economic viability.

As illustrated in the farm history (Attachment 1), the duck club likely qualifies as historically significant as defined by CEQA (CEQA Guidelines 15064.5), due to its long history and association with the lives of notable celebrities, and culture of the Sacramento Valley. If Project operations force the club to close, this impact would be significant. The DEIR fails to address this potentially significant impact.

B. The DEIR Fails to Adequately Disclose or Mitigate Significant Sediment and Debris Impacts in the Sutter Bypass

Each year, the Creps Farm receives significant volumes of sediment and debris carried down the Tisdale Canal and deposited on our farm. During years when there is a DWR Sediment Removal Program (2007, 2020) and the ground has been disturbed by excavation, we receive the most excessive amounts of sediment deposited on our farm.

Attached is a 2008 LiDAR elevation survey (Attachment 3) illustrating the mounds of sediment and debris that were moved off our fields after the 2007 DWR Sediment Removal Project. The yellow and orange mounds along the borders of the west and north fields correspond to the extensive, costly work our farm crew did to move sediment and debris to the outside of the fields to re-level. As a result of the 2007 sediment project, the Creps Farm suffered the impact of thousands of cubic yards of sediment deposited over 150-200 acres.

In addition, after the 2007 sediment removal project, SBDC blinds were filled with sediment. Duck Club operators had to dig 2 feet of sediment and debris out of at least 6 blinds on the property. Every year, we continue to receive excessive debris and sediment deposits requiring extensive work on our part to re-level our fields for planting and maintain our duck blinds.

In 2020, we had a shortened time to prepare fields due to initial information that our water rights would be curtailed. Once we learned we would have water to farm, we were faced with once again moving mounds of sediment and debris. A full crew, working at maximum capacity, was unable to complete field preparation. Some fields with uneven mounds were planted and produced diminished yields, while another 15 acres went fallow. We took financial hits both from the increased cost of field preparation work and the reduced yields and fallowed fields resulted in lost income.

According to DWR's factsheet, "DWR's Sutter Maintenance Yard maintains the Tisdale Bypass, weir and its levees to its mouth at Sutter Bypass every year." Our farmers watch as the Maintenance Yard often forms piles of debris and sediment and leaves these piles at the mouth of the levee, next to our fields. When the canal runs water, the piled debris is washed onto our fields and we are required to relevel at great expense.

In a January 11, 2021 DWR meeting with Sutter Bypass- Butte Slough Water Users' Association members, we were shown an aerial photograph of the convergence of the Tisdale Canal and the Sutter Bypass. The image was of our farm and clearly showed a brown, sediment laden body of water flooding our farmland. At the southern end of the photo, the brown, muddy waters can be seen to swirl with the cleaner, blue waters. This photograph illustrates the current that carries sediment from Tisdale Canal to the Sutter Bypass.

Our farm is already adversely affected by significant sediment and debris impacts from DWR's ongoing sediment removal projects for the Tisdale Bypass. The DEIR suggests the increased flow from the Tisdale Bypass as a result of the Project operations will increase the volume of sediment and debris deposited downstream in the Sutter Bypass. Project-related impacts will be individually significant when considered with DRW's past, current and future sediment removal efforts for the Tisdale Bypass. They also will contribute considerably to ongoing significant cumulative impacts in the Sutter Bypass. To mitigate these impacts, maintenance of the Tisdale Bypass should extend to include removal of sediment and debris beyond the Tisdale Bypass and into the Sutter Bypass.

Project-Related Inundation and Sediment Impacts May Lead to Agricultural Land Conversion and Significant Economic Impacts

Rice farming provides the highest value use of our farmland. If we receive additional waters on our rice fields that prohibit us from planting, and spend excessive time and resources removing sediment and debris to relevel our farm, we suffer economic hardship. Crops that must be planted later in the year due to wet fields and insufficient field preparation time produce lower yields. If waters remain on the farmland into June and we are unable to plant, our fields will lie fallow. If we have multiple years of fallowed fields, we stand to lose access to crop insurance.

If farming diminishes to the point of becoming economically unviable, we may be forced to convert to other forms of income.

Our farm receives a double impact from the Project. Due to the necessity to remove debris and sediment from the farmland, preparation of the fields takes longer and is more costly. At the same time, if there is excessive water on our fields, we must wait for the water to recede before we can prepare our fields. We end up facing less available preparation time and more preparation required. Lose/Lose.

III. Project Impacts Will Increase the Burden of the Existing Flood Easement on Landowners and Will Require Adequate Compensation

If we lose our ability to farm as the result of increased water inundation due to the notch in the Tisdale Weir, we will stand to lose a farming way of life that has existed on our property for 80 years. In addition, when sediment and debris continue to be deposited on our farm and require extensive resources to level our fields, we must spend additional time in field preparation. Taken together, the increased inundation along with longer field preparation time to move sediment can make it difficult to seed our fields by June 1. If we are unable to plant by June 1, our yields will be less and we will assume economic hardships. All of these factors influencing our farmland as a result of the Project require mitigation and potentially compensation. These additional burdens go beyond the existing flood easements currently in place.

IV. Use of Project Facilities for Floodplain Habitat Creation Will Require the Consent of Bypass Property Owners; Addressing Landowner Concerns Will be Essential to Securing Such Consent

The Creps Family believes in conservation and we have been quick to embrace habitat restoration projects. We have been in discussions with Paul Buttner of the CA Rice Commission regarding habitat restoration for salmon and birds on our farmland. Most recently, we were posed to

participate in the Bid For Birds program. However, until we have a full understanding of the Project effects on our farmland, we are discontinuing these discussions.

IV. Conclusion

The DEIR review process has raised more questions than it has answered. We are left wondering how the Tisdale Project will increase inundation on our farm and questioning how, after 80 years, we will continue to farm rice on our fields if they are flooded late in the season.

When a tool that can answer our questions for specific water level, duration and frequency is available and withheld from us, we are suspicious of the intent of the DEIR. When DWR meeting agenda items include "Real Estate Processes", we wonder if our property is headed for further easements or even eminent domain confiscation.

It is difficult for us to make farm management decisions during this time of uncertainty. We have recently filed a Limited Liability Company partnership and are engaged in writing an Operation Agreement. Also, we have an irrigation well permit pending with the U.S. Corps of Engineers. In both instances, we are questioning how to proceed knowing that our farm may be rendered fallow due to excessive inundation as a result of the Tisdale Project.

We have acted in good faith to review the DEIR and attempt to understand how the Project will affect our farm. We request that we be treated with the same transparency and allowed to know the extent of how our farm will be affected.

Please notify me when the final EIR is complete and where I may review responses to my comments at least ten days before DWR acts to certify the EIR and consider approving the Project.

Pursuant to the Public Resources Code section 21092.2, I hereby request that DWR send me a copy of any NOD filed for the Project, as soon as it is filed. Please mail the NOD to me at the address below, and also email it to me at JulieLBradford@gmail.com. Thank you.

Sincerely,

Julie L. Bradford
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916-705-6040
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Cc: Kelley M. Taber
Somach Simmons & Dunn
500 Capitol Mall, Suite 1000
Sacramento, CA 95814

Irene Creps
Wilma Creps LaPerle

James Evans
John Marler
Larry Middleton
Kent Thompson
Janet Wegener

Attachment 1
HISTORY OF THE CREPS FARM IN THE SUTTER BYPASS (1906 – CURRENT)

This is the story of a farming family that has weathered many government interventions and continues to fight for the right to farm the land they have owned for 115 years.

In 1906, Matilda Creps purchased land that is now the Creps Farm in the Sutter Bypass (deed attached). At the time, the land Matilda purchased was a seasonal floodplain. Matilda, a young widow with 7 children, owned a cattle ranch in Yuba County and recognized that the Sutter property offered summer grazing land for her family's cattle. The cattle were driven from Yuba County to Sutter County to graze in the late spring when the water receded from the floodplain and feed grew abundant.

In 1916, a portion of the family property was condemned to construct the Sutter Bypass levies and canals. When construction of the bypass divided the property in two, the family was unable to reach the acreage on the west side of the canal and was forced to sell 315 acres in addition to the condemned land taken from them.

The Creps family has a long history of conservation and community involvement. In 1920, acting as good stewards of the waterfowl habitat, they established the Sutter Basin Duck Club (SBDC). SBDC celebrated 100 years of continuous operation in 2020. During the early years, the club hosted Hollywood celebrities such as Bing Crosby, Clark Gable and Roy Rogers. Over the last hundred years, hundreds of hunting enthusiasts have enjoyed the duck club with views of the Sutter Buttes where game is abundant.

In 1942, the next generation of the Creps family lost their home and the 1,400 acre cattle ranch in Yuba County when their property was confiscated under eminent domain, taken to create Camp Beale Army Base during WWll. A recently widowed mother, Dena Creps and her 3 young children (David, Wilma and Irene) were displaced. No longer able to practice cattle ranching, they turned to their remaining property in the Sutter Bypass and began rice farming in 1942, the same year they were forced to leave their Yuba ranch.

The first rice crop was planted on the Creps Farm by Angelo Giusti and his family. The Giustis farmed from 1942 until the early 1950s, when David Creps returned home from the Korean War and he and his cousin Milton Middleton assumed responsibility for the family farm. David farmed and managed the rice operations until his death in 2020 at the age of 92. The Creps Farm has been continuously farmed for rice for nearly 80 years.

In 1945, The Sutter National Wildlife Refuge, our immediate neighbor to the north, was established. To create the refuge meant acquiring land, and the Creps family was once again threatened with eminent domain. Dena Creps pleaded with government agents to allow her to keep the property that provided income for her family. This time, she prevailed and was allowed to keep her land.

In 1952, a delegation of former Yuba County landowners, led by Wilma Creps, appeared before the US Congressional Armed Services Committee to argue that 40,000 acres of the Beale Base was unused and should be returned to the former landowners. Congress granted their request and thousands of acres were returned. 80 acres was returned to the Creps family and is now

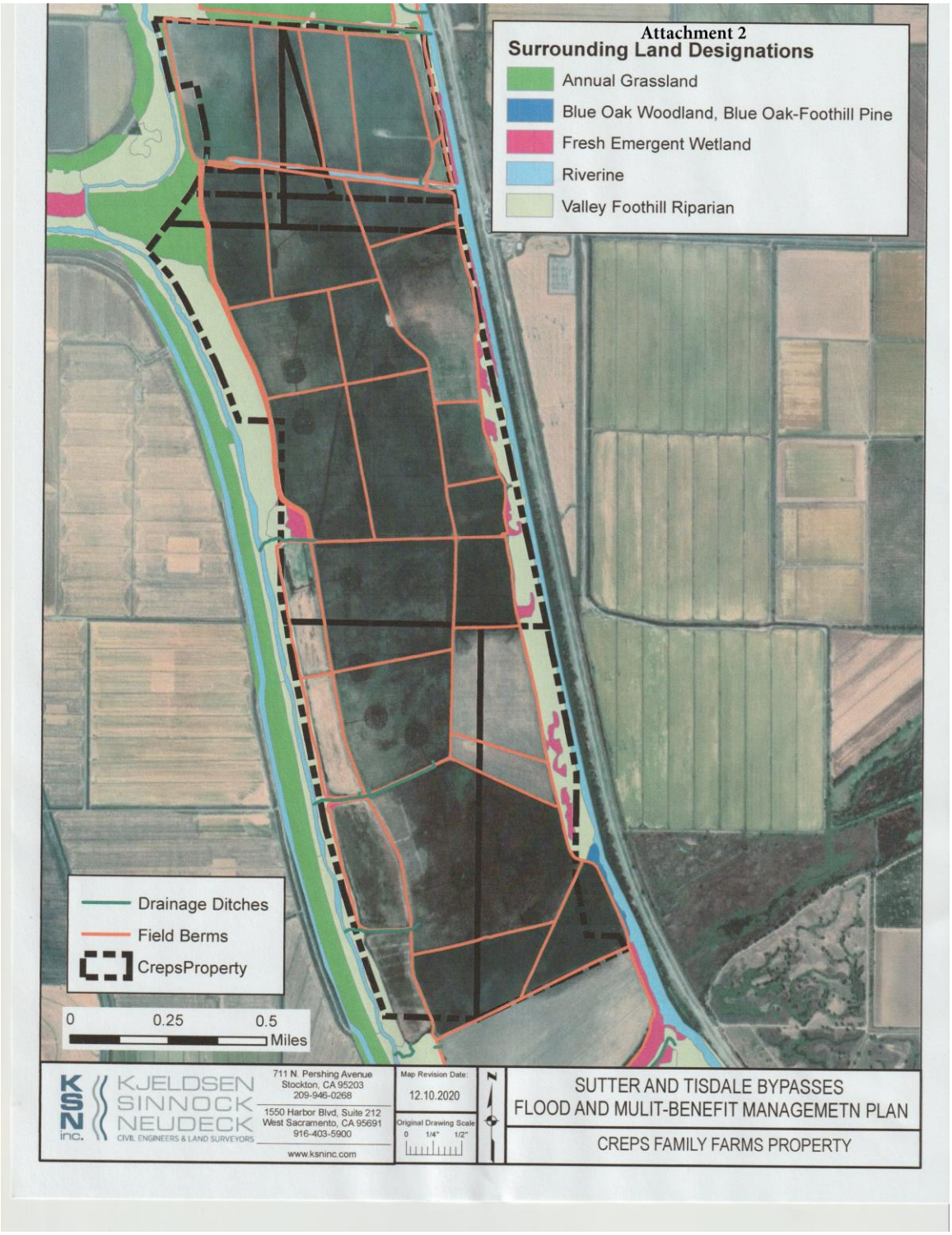
part of a conservancy owned by Irene Creps. At the age of 90, Wilma Creps LaPerle and her sister Irene Creps, aged 86, are still active landowners in the Creps Farm LLC.

The Creps landowners believe in conservation as evidenced by maintenance of the riparian habitat along the east and west boundaries of the farm. This part of the property, roughly 100 acres, provides habitat for shorebirds, waterbirds, raptors, songbirds, reptiles and mammals. Although they could make additional farming income by converting some of this habitat to farmland, the family has chosen to leave it in its' natural state throughout their 115 year history of responsible stewardship.

Today, the farm is owned by 4 grandchildren/greatgrandchildren of Matilda Creps, the original owner. They have leases with 2 farmers and provide employment for 6 others during the farming season. The rice operations support 12 individual families. The Sutter Basin Duck Club (SBDC) is operated by brothers James and John Evans. Over 100 hunters are members or guests of the club annually. The Creps farm and the people associated with it are civic minded individuals who believe in giving back to their community. For example, in 2019, David Creps was recognized for his $1 million contribution to the City of Wheatland to finance the construction of a community swimming pool. David continued a tradition begun by his mother Dena Creps who, for many years until her death at age 99, rented a private swimming pool every August to provide the children of Wheatland a place to swim.

Rice farming in the bypass has never been easy. The Creps family has fought to obtain water rights, been forced to sell their land to create the Sutter Bypass, accepted flow easements, negotiated power plant encroachments and advocated for irrigation well permits. They have worked hard, supported their community, handled their business dealings fairly and with respect. They expect the same in return.

389 **Attachment 2**



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391 **Attachment 3**

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Letter I4 Response	Creps Farm LLC, Julie Bradford February 1, 2021

I4, Lines 16-19 DWR will provide a copy of the Notice of Determination to the commenter.

I4, Lines 20-22 The commenter suggests that Creps Farm will be directly and significantly affected by the Proposed Project, as it is located exactly at the confluence of the Sutter Bypass and the Tisdale Bypass, and most of the farm lies south and downstream of the Tisdale Bypass. See Comment Responses I4-7 through I4-10, which address potential impacts to the Creps Farm from the Proposed Project relating to flooding, fallowing, access to duck clubs, sediment and debris, flowage easements, and economic effects.

I4, Lines 23-43 The background information on the Creps Farm provided in the letter and in Attachment 1, *History of the Creps Farm in the Sutter Bypass (1906-Current),* and Attachment 2, *Creps Family Farm Property Map,* is noted.

I4, Lines 44-47 The commenter requests additional information describing the operation and construction of the notch. As it relates to whether a smaller notch was considered, as shown in Table 2-1 of Chapter 2, *Project Description* (on page 2-9 of the DEIR), 10 feet is the minimum width criterion for sturgeon passage, so a smaller notch width was generally not considered feasible, as it would not meet one of the primary project objectives of improving fish passage through the weir to the Sacramento River. The project configuration was modeled (DEIR Appendix F, *Fish Passage Analysis Technical Memorandum*) to meet the fish passage criteria listed in Table 2-1 (page 2-9 of the DEIR) for a large range of flood flows, greatly improving fish passage during and after weir spill events compared to current conditions. Notch width and connection channel skew angle had the most prominent influence on fish passage performance. The fish passage facilities are intended to provide passage for all species; however, designs focus on passage conditions for Chinook salmon (*Oncorhynchus tshawytscha*) and green sturgeon (*Acipenser medirostris*). The notch width and invert were based upon fish passage criteria and engineering feasibility; see DEIR Appendix F, *Fish Passage Analysis Technical Memorandum* (Section 4.3.2, page 21), and DEIR Appendix J, *Engineering Feasibility Report* (Section 6.5.4, page 40).

As it relates to information describing the operation of the notch and whether it could be opened and closed to reduce flooding in the Sutter Bypass during critical farming periods, as proposed, the notch would be outfitted with an operable gate that could be opened and closed. The

proposed notch, connection channel, and basin would function collectively to provide fish passage from the Tisdale Bypass to the Sacramento River. The proposed gate operations are described in the DEIR Chapter 2, *Project Description,* on pages 2-20 through 2-22. In general, during the flood season (November 1 to April 15), the notch gate would be in the up (closed) position, but would be opened shortly after a Tisdale

Weir overtopping event (e.g., within approximately four hours of the onset of flow into the Tisdale Bypass). The notch gate would be closed once the Sacramento River stage recedes below the notch invert elevation and water has left the basin. In some cases, it may be necessary to deviate from or modify normal operations (as described in Chapter 2, *Project Description,* of the DEIR on pages 2-21 and 2-22). The plan for gate operations may change or evolve based on further agency consultation during the permitting process or longer-term adaptive management actions, or both.

The comment does not define "critical farming periods" when asking about the potential to close the notch to reduce flooding in the Sutter Bypass; however, the notch is proposed only to be operated in conjunction with a weir spill event, which is therefore coincident with existing bypass flooding, which generally occurs during the flood season. As described in DEIR Section 3.2, *Agricultural Resources,* the growing season in the Sutter Bypass occurs spring to fall, generally outside the flood season.

Project effects on agricultural operations in the Sutter Bypass are further described in Master Comment Response 2.

I4, Lines 48-49 Sediment removal in the Sutter Bypass is not included as part of the Proposed Project. The additional volume of sediment that may be delivered to the Tisdale Bypass (and ultimately the Sutter Bypass) as a result of the Proposed Project is, in any given year or cumulatively, a very small volume of sediment compared to the downstream area of delivery and is within the range of existing conditions.

DWR will continue to conduct regular sediment removal activities (and separate projects, as deemed necessary) associated with the Tisdale Bypass based on monitoring and assessment, with or without the Proposed Project. Impacts 3.7-2 and 3.7-3 in DEIR Section 3.7, *Hydrology* (and DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum*), discuss sediment deposition under existing conditions and Proposed Project conditions. Although the Proposed Project would increase the volume of sediment deposited in the Tisdale Bypass by approximately 8–9 percent over 10 years, this amount of expected deposition is within the historical

range of sediment removed by DWR in the Tisdale Bypass through existing O&M activities.

As stated in DEIR Chapter 1, *Introduction*, DWR operates and maintains the Tisdale Bypass in accordance with California Water Code Section 8361, and the Tisdale Bypass's maintenance objectives are governed by the Operations and Maintenance Manuals developed by USACE as part of the Sacramento River Flood Control Project. Maintenance activities include clearing sediment and vegetation, repairing and guarding against erosion and subsidence, making appropriate repairs to flood control facilities, and performing necessary maintenance of State facilities. Further, at a programmatic level, the current DWR maintenance activities have environmental (CEQA) and permitting coverage under the Environmental Permitting for Operation and Maintenance or EPOM Program (2018 EIR, State Clearinghouse Number 2015052035). Sediment maintenance in the Tisdale and Sutter Bypasses will occur as currently practiced, with or without the Proposed Project.

For additional information on Tisdale Bypass O&M and sediment/debris accumulation and movement in the Tisdale and Sutter Bypasses from operation of the Proposed Project, see Master Comment Response 1.

I4, Lines 50-51 The comment questions how farmers and duck club owners would be compensated for additional work or lost revenue sustained as a result of the Proposed Project. State CEQA Guidelines Sections 15131(a) through 15131(c) provide guidance on the discussion of economic (and social) effects in an EIR. Specifically, such effects may be included in an EIR but "shall not be treated as significant effects on the environment." However, economic and social effects may be used to determine the significance of physical changes caused by a project, but these changes "need not be analyzed in any detail greater than necessary to trace the chain of cause and effect." Any economic impacts from the proposed project would not constitute or contribute directly or indirectly to an effect on the physical environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

I4, Lines 52-62 The commenter suggests that because of their farm's unique location at the mouth of the Tisdale Canal inside the Sutter Bypass, the farm receives immediate and significant impacts of any activity affecting the Tisdale Weir and Canal. Specifically, the comment suggests that additional flow because of the Proposed Project could, in multiple years, flood the farm "deep into the planting season and render [the] farm fallow." As stated in DEIR Impact 3.2-1 (pages 3.2-13 through 3.2-15), the Proposed Project would not result in fallowing such that permanent agricultural land conversion to non-agricultural uses would occur. The predicted change in the number of wet days as a result of the Proposed Project is relatively small and would not result in additional flooding extending deep into the planting season and cause fallowing. Specifically:

- Over the 22-year model simulation, the analysis predicted one additional year of fallowing compared to existing conditions for 11 of the Creps fields (out of the total 15 for all of the Sutter Bypass) and two additional years of fallowing for one of the Creps fields (out of the total three for all of the Sutter Bypass) as a result of Project operation.

- The maximum number of *consecutive* years fallow is predicted to go from two years to three years only for Field No. 17. The remaining Creps fields are not predicted to experience any increase in the maximum number of consecutive years fallow with the Proposed Project (observed fallow years are shown in Attachment B of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis;* the predicted change maximum consecutive fallow years are shown in Figure 10 of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, Figure 10).

TUFLOW model output for the agricultural season, which underlies the analysis presented in the DEIR, is included as Attachments B1 and B2 to this FEIR. For convenience, information specific to the Creps fields are also summarized and presented below as **Figure 1** and **Figure 2**.

As is relates to the Proposed Project resulting in the need to plant later in the season, among the Creps fields, in many years (over half) the predicted change in wet days (a wet day being a measure of flooding) during the agricultural season would not result in a noticeable change, as the given field either remains dry under both conditions (Proposed Project and existing) or is already temporarily fallowed under existing conditions (Figure 2). For the remaining years, the vast majority of the predicted changes are less than or equal to four additional wet days during the assumed 121-day-long agricultural preparation and planting period (Figures

1 and 2). Collectively, over 90 percent of the predicted change (considering each Creps field and each year simulated) is either not noticeable or less than or equal to four additional wet days during the assumed 121-day- long agricultural preparation and planting period (Figures 1 and 2). Thus, most of the predicted change in the number of wet days was relatively small and would not result in additional flooding extending deep into the planting season. However, regardless of the absolute change in the number of wet days (which was generally small), the analysis of agricultural impacts focused specifically on whether or not the predicted change in wet days for a given field would delay planting such that the field would likely be fallowed.

The maximum number of consecutive years fallow is not predicted to double as stated in the comment; it is predicted to go from two years to three years for Field No. 17 (see DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, Figure 10). The remaining Creps fields are not predicted to experience any increase in the maximum number of consecutive years fallow with the Proposed Project (DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Figure 10).

In the analysis of agricultural resources (DEIR Section 3.2, *Agricultural Resources*), the DEIR addresses potential impacts to agricultural production, including for the Creps property, as a result of delayed planting and any resultant fallowing and the potential for that fallowing to subsequently lead to land conversion to some other non-agricultural uses. For example, if as a result of Project operation field preparation would be delayed, in any year, beyond April 29, the Proposed Project was predicted to cause fallowing, as was the case for some of the Creps fields (shown in Figure 9 and Figure 10). Over the 22-year model simulation, the analysis predicted one additional year of fallowing for 11 of the Creps 26 fields and two additional years of fallowing for one of the Creps 26 fields as a result of Project operation. Based on the information available with respect to farming within the Sutter Bypass and published information on the extent of fallowing currently observed, the relative magnitude of these predicted impacts was not considered large enough to result in the permanent conversion of farmland. For additional information on Proposed Project Sutter Bypass flow and potential impacts on agricultural resources, see Master Comment Response 2.

DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis* (Section 3.1, Methods, page 14), states that the primary variable behind the analysis is the incremental difference in location, duration, and frequency of additional wetted area in the Sutter Bypass between existing and Proposed

Project conditions during the assumed agricultural preparation and planting period (March 1 through June 30). Based on an understanding of current agricultural practices within the Sutter Bypass, the following variables were calculated and the following assumptions were adopted in the modeling analysis of potential Project impacts on Farmland (Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, page 16):

- Last Day Wet—defined as the date the ground is considered to be dry enough for tractors to chisel fields. This is assumed to occur when 70 percent or more of the field is dry (Reclamation and DWR 2019), as computed by the TUFLOW model at the end of a given day.

- Drying and Preparation Period—defined as the sum of additional days to reflect (1) the necessary assumed drying time before field preparation begins, and (2) an assumed field preparation period.

- Planting Date—defined as the Last Day Wet plus the Drying and Preparation Period. The later the planting date, the greater potential for decreases in agricultural yield.

- Agricultural Field Preparation and Sowing Period—defined as March 1 through June 30 (based on Reclamation and DWR 2019).

For additional information on definitions used relating to flow, frequency, duration, and timing and magnitude (water depths and extents), see Master Comment Response 2.

The portion of the comment regarding rice yield, income, and crop insurance do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

I4, Lines 63-64 The commenter states that excessive flooding would limit access to their duck club. Among the Creps parcels, during the recreational waterfowl hunting season, the predicted increase in the number of wet days (i.e., the

number of additional days during which hunting access would be limited by flooding), on average, ranges from approximately zero to two days per year as result of the Proposed Project. For context, the waterfowl hunting season spans 138 days (from September 28 through February 12). As concluded in the DEIR's Impact 3.8-2, given the seasonal and year-to-year variation in inundation within the Sutter Bypass under existing conditions this small, predicted change as a result of the Proposed Project would not result in any substantial loss of recreational opportunities with regard to waterfowl hunting, or result in substantial repairs to submerged blinds or roads as stated in the comment.

The change in the frequency, extent, and duration of inundation as it relates to potential Project impacts on recreation (including duck hunting) were analyzed with the TUFLOW model (DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*) and addressed in DEIR Section 3.8, *Recreation*.

As noted in DEIR Section 3.8.4, *Methods of Analysis*, the Sutter Bypass is a floodway that conveys floodwater and frequently inundates duck hunting sites within the Sutter Bypass (without the Proposed Project) at depths considerably greater than a few feet and this closes access roads. When the sites are not inundated by floodwaters, some areas are actively managed (via diversion and pumping) to generate the desired, shallow-flooded habitat (optimal water depth is typically 18 inches).

To assess any potential flow-related impacts of the Proposed Project, a comparative assessment of the additional wet days resulting from increased flows from the Proposed Project was used as a proxy for a lack of access/too wet to hunt. The term wet day assumes the given field or parcel is inundated at a depth of at least 0.1 feet over at least 30 percent of its area, and is effectively considered inundated on that day for purposes of the analysis presented in the DEIR. Thus, as a metric, a wet day comprises inundation extent, water depth, and duration (see also Master Comment Response 3 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*).

DEIR Impact 3.8-2 (pages 3.8-11 through 3.8-13) and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, discuss the predicted average annual change in the number of wet days compared to existing conditions, by parcel, as a result of the Proposed Project. For the private waterfowl hunting clubs in the Sutter Bypass on Williamson Act parcels, the predicted increase in the number of wet days, on average, is at most one day per year (i.e., the Proposed Project, on average, may preclude duck

hunting, or at least preclude ideal conditions for duck hunting, for one additional day per year during a 138-day duck hunting season). For all other private parcels within the Sutter Bypass, the predicted increase in the number of wet days during waterfowl season, on average, is at most three days per year (i.e., similarly, the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for up to three additional days per year during a 138-day duck hunting season) (see Table 1 and Figure 12 in Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, of the DEIR). Beyond this, there would be no effective change in water levels during time periods when duck hunting typically occurs.

For additional information on Proposed Project Sutter Bypass flow and potential impacts on recreation, see Master Comment Response 3.

The portion of the comment regarding duck club operations and costly repairs do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

I4, Lines 65-72 DWR acknowledges the commenter's observations about the existing challenges of farming and maintaining hunting blinds within an engineered flood bypass system designed to periodically convey large amounts of water and sediment. Land use activities within a floodway are inherently more constrained than for otherwise similar activities on the land side of a levee.

The Proposed Project would not result in an increase in sediment and debris that would result in adverse impacts to agricultural or duck club operations. The additional volume of sediment that may be delivered to the Tisdale Bypass (and ultimately the Sutter Bypass) as a result of the Proposed Project is, in any given year or even considered cumulatively, a very small volume of sediment compared to the downstream area of delivery. As noted in Response to Comment I4-5, Impact 3.7-3 in DEIR Section 3.7,

Hydrology, and DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum*, addressed the potential for increased sedimentation as a result of the Proposed Project and concluded that about an 8–9 percent increase in sediment deposition could occur over 10 years, which is within the historical range of sediment removed by DWR in the Tisdale Bypass through existing O&M activities. For context, if all the additional sediment predicted to be delivered over a 10-year period as a result of the Proposed Project (approximately 136,000 cubic yards; see Tables 2 and 3 in Appendix H, *Sediment Budget Analysis Technical Memorandum*, of the DEIR) were to be spread over approximately 1,000 acres (which would represent something similar to the Creps property and only a small fraction of the Sutter Bypass area), it would equate to a depth of less than 0.08 feet. Even this relatively small depth value should be considered a very conservative estimate, as it is unrealistic to assume all the sediment delivered would be deposited and it is further unrealistic to assume that it would all be deposited over such a small area. For comparison, the combined bottom area of the Tisdale Bypass and the Sutter Bypass (that portion from the Tisdale Bypass downstream) is approximately 12,800 acres.

No change in the delivery or deposition of woody debris was predicted as a result of the Proposed Project and these processes would remain within the range of existing conditions. Appendix B, *Large Wood Debris at Tisdale Weir Technical Memorandum*, of Appendix J, *Engineering Feasibility Report*, of the DEIR, evaluated large wood debris (LWD) accumulation in the area along Tisdale Weir under existing conditions and with the Proposed Project. As stated on page 4 of Appendix B, *Large Wood Debris at Tisdale Weir Technical Memorandum*, of Appendix J, *Engineering Feasibility Report*, of the DEIR, the risk of LWD accumulation as a result of the Proposed Project is relatively low in the Tisdale Bypass (and therefore the Sutter Bypass). Sediment deposition and debris in the Tisdale Bypass under Project conditions is also discussed in Impacts 3.7-2 and 3.7-3 in DEIR Section 3.7, *Hydrology*, and Chapter 5, *Alternatives*.

For additional information on sediment/debris accumulation and movement in the Tisdale and Sutter Bypasses from operation of the Proposed Project, see Master Comment Response 1.

TUFLOW model output for water depth and waterfowl season, which underlies the analysis presented in the DEIR, is included as a part of Master Comment Responses 2 and 3 (and Attachments A–F to this FEIR). Information specific to the Creps parcels is also summarized and presented separately below as **Figures 3 through 5**. Among the Creps parcels, the

predicted increase in the number of wet days, on average, ranges from approximately zero to two days per year as result of Project implementation during waterfowl hunting season. For any given Creps parcel and year, the majority (over 90 percent) of the predicted change is three additional wet days or less (Figure 5). For context, the waterfowl hunting season used in the DEIR analysis spans 138 days (from September 28 through February 12).

Among the Creps fields, in many years (over half) the predicted change in wet days (a wet day being a measure of flooding) during the agricultural season would not result in a noticeable change, as the given field either remains dry under both conditions (Proposed Project and existing) or is already temporarily fallowed under existing conditions (Figure 2). For the remaining years, the vast majority of the predicted changes are less than or equal to four additional wet days during the assumed 121-day-long agricultural preparation and planting period (Figures 1 and 2). Collectively, over 90 percent of the predicted change (considering each Creps field and each year simulated) is either not noticeable or less than or equal to four additional wet days during the assumed 121-day- long agricultural preparation and planting period (Figures 1 and 2). Thus, most of the predicted change in the number of wet days was relatively small and would not result in additional flooding extending deep into the planting season. The analysis of agricultural impacts focused more specifically on whether or not the predicted change in wet days for a given field would delay planting such that the field would likely be fallowed. This approach was taken because the relevant CEQA threshold for agricultural resources concerns Project-related impacts of a nature and magnitude that would result in converting the existing agricultural land use to another use. For 12 of the 26 Creps fields, in one year (out of 22) the predicted increase in the number of wet days delays the assumed planting date such that the field is predicted to be fallowed under the Project condition (these are shown in Figure 9 and Figure 10 of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*); most of these instances are in WY 2011, which experienced a brief, late-season (June) weir overtopping event that resulted in late- season flooding of some of the Creps fields.

For additional information on Proposed Project Sutter Bypass flow and potential impacts on agricultural resources, see also Comment Response I4-7, above. See Master Comment Responses 2 and 3 regarding the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources and duck club operations.

I4, Lines 73-75 The comment is directed toward economic impacts from the Proposed Project, which do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

I4, Lines 76-80 The DEIR clearly describes how the Proposed Project could affect agricultural uses in the Sutter Bypass related to the CEQA impact analysis and is not incomplete as stated by the commenter. As stated in DEIR Impact 3.2-1 (pages 3.2-13 through 3.2-15), the Proposed Project would not result in fallowing such that permanent agricultural land conversion to non-agricultural uses would occur. The predicted change in the number of wet days is relatively small and would not result in additional flooding extending deep into the planting season and cause fallowing. Specifically for the Creps fields:

- Over the 22-year model simulation, the analysis predicted one additional year of fallowing compared to existing conditions for 11 of the Creps fields (out of the total 15 for all of the Sutter Bypass) and two additional years of fallowing for one of the Creps fields (out of the total three for all of the Sutter Bypass) as a result of Project operation.

- Among the Creps fields, in many years (over half) the predicted change in wet days (a wet day being a measure of flooding) during the agricultural season would not result in a noticeable change, as the given field either remains dry under both conditions (Proposed Project and existing) or is already temporarily fallowed under existing conditions (Figure 2).

- For the remaining years, the vast majority of the predicted changes are less than or equal to four additional wet days during the assumed 121-day-long agricultural preparation and planting period (Figures 1 and 2).

- Collectively, over 90 percent of the predicted change (considering each Creps field and each year simulated) is either not noticeable or less than

or equal to four additional wet days during the assumed 121-day-long agricultural preparation and planting period (Figures 1 and 2). Thus, most of the predicted change in the number of wet days was relatively small and would not result in additional flooding extending deep into the planting season.

This amplified information further clarifies the minimal influence on agriculture at the Creps Farm. A more detailed description of inundation characterized by wet days and how the Last Day Wet assessment is complete is provided here to address concerns in this comment.

As stated in Response I4-7, the change in the frequency, extent, and duration of inundation as it relates to potential Project impacts on agricultural resources were analyzed with the TUFLOW model (DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*) and addressed in DEIR Section 3.2, *Agricultural Resources*. In the analysis of agricultural resources, the DEIR addresses potential impacts to agricultural production as a result of delayed planting, and the potential for subsequent land conversion to other non-agricultural uses. DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Figure 7 and Figure 8 summarize the number of agricultural fields that had a given total number of fallowed years and a given maximum number of consecutively fallowed years.

As described on page 16 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, the following definition was used relating to flow frequency, duration, and timing and magnitude (water depths and extents) in the Sutter Bypass for the "Last Day Wet." A justification for the use of these definitions and/or dates is described in Section 3.1, *Methods,* of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR. The Last Day Wet is defined as the date the ground is considered to be dry enough for tractors to chisel fields. This is assumed to occur when 70 percent or more of the field is dry (less than 0.1 feet depth) (Reclamation and DWR, 2019), as computed by the TUFLOW model at the end of a given day. Thus, as a metric, the last day wet comprises inundation extent, water depth, and timing (duration is not applicable because the definition relates to only the end of the inundation period).

The analysis of agricultural impacts in the DEIR focused more specifically on whether or not the predicted change in wet days for a given field would delay planting such that the field would likely be fallowed. This approach was taken because the relevant CEQA threshold for agricultural resources

concerns Project-related impacts of a nature and magnitude that would result in permanently converting the existing land use to non- agricultural use. Over the 22-year model simulation, the analysis predicted one additional year of fallowing for 11 of the 26 Creps fields and two additional years of fallowing for one of the 26 Creps fields as a result of Project operation (these are shown in Figure 9 and Figure 10 of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*); most of these instances are in WY 2011, which experienced a brief, late-season (June) weir overtopping event that resulted in late-season flooding of some of the Creps' fields.

For additional information on Proposed Project Sutter Bypass flow and potential impacts on agricultural resources see also Comment Response I4-7, above. See Master Comment Responses 2 and 3 regarding the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources and duck club operations.

The DEIR's impact assessment methodology are adequate and supported by substantial evidence and the DEIR provides sufficient information to permit a meaningful evaluation of Project impacts.

I4, Lines 81-89 A web-based modeling results and analysis tool (dashboard) was developed by DWR during the planning for the Proposed Project. The dashboard is a convenient, interactive means of querying, displaying, and summarizing a wide array of TUFLOW model output (which could serve multiple purposes). The "dashboard" tool was not intended for determining impacts of the Proposed Project under CEQA. All relevant components of the TUFLOW model outputs, as viewed by the dashboard and generally represented in Attachments A–F to this FEIR, were available to DWR during preparation of the DEIR and were used in the CEQA analysis conducted to evaluate potential impacts to fields/ parcels within the Sutter Bypass from the Proposed Project.

I4, Lines 90-94 Responses to the Sutter Bypass–Butte Slough Water Users' Association letter referenced in the comment are addressed in Responses O1-1 through O1-40. Responses to comments specific to Creps Farm are provided in Responses I4-14 through I4-42.

I4, Lines 95-97 The DEIR's impact assessment methodology and assumptions are adequate and sufficient information has been provided for evaluation of impacts associated with implementation of the Proposed Project. Comments about the DEIR's impact assessment methodology and assumptions and

information provided to landowners are addressed in Responses 14- 15 through I4-27.

I4, Lines 98-101

The comment references the comments provided in Letter O1-7.

As stated in Response O1-7, the methodology used in the DEIR to evaluate potential impacts from inundation and sedimentation is adequate and sufficient to evaluate potential Project impacts to fields in the Sutter Bypass. This methodology is fully described in in Section 3.2.4, Impacts and Mitigation Measures, Section 3.8.4, *Impacts and Mitigation Measures,* and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis.*

The DEIR does not base the agricultural land fallowing impacts analysis on modeled results averaged over the analysis period as stated in the comment; the agricultural impacts analysis uses a daily time step/increment to assess impacts. The TUFLOW model and analysis was run for a 22-year simulation period (WY 1997–2018) (not 12 years) including a variety of water year types as categorized by water year typology based on the Sacramento Valley Water Year Index (e.g., Wet, Above Normal, Below Normal, Dry, and Critical). See page 5 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis.*

Predicted changes in fallowing are not compared to an average of fallowing events, they are compared to the total reported fallowing events. Existing data (U.S. Department of Agriculture CropScape) on fallowing within the Sutter Bypass was used in the DEIR analysis. This data was only available for a 12-year period (2007–2018) and these were used to characterize existing fallowing practices within the Sutter Bypass (the commenter conflates the two – the model period and the period over which actual fallowing data are available). See page 21 in Appendix C, *TUFLOW Model Results and CEQA Impact Analysis* of the DEIR.

See Master Comment Responses 2 and 3 regarding the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources and duck club operations.

I4, Lines 102-105

The commenter states that the DEIR reports that the Proposed Project will temporarily affect approximately 10 percent of Sutter Bypass farmland fields and the commenter does not agree with the DEIR's conclusion that farmland would not suffer any significant impact. To clarify, the TUFLOW model shows that as a result of the Proposed Project, only 18 out of the 115 farmland fields (approximately 1,026 out of 10,045 acres) in the Sutter

Bypass (approximately 10 percent of fields) would, on rare occasion, experience a change in fallowing over a 22-year simulation period. Specifically:

– For 15 of the 18 fields, there would be one additional year of fallowing.

  - For two of these 15 fields, the additional year of fallowing would be consecutive, potentially taking one field (Field 70) from one to two maximum consecutive years of fallowing and the other field (Field 17) from two to three maximum consecutive years of fallowing.

– For three of the 18 fields, there would be two additional years of fallowing (and no changes to the maximum consecutive years of fallowing).

Therefore, only one field (Field 70) out of 115 is predicted to experience a "doubling" of the observed maximum number of consecutive fallow years, in this case going from one to two. This represents less than 1 percent of the total fields in the Sutter Bypass. Observed fallow years are shown in Attachment B of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis;* the predicted change in fallow years and maximum consecutive fallow years are shown in Figure 9 and Figure 10 of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis.* The vast majority of fields in the Sutter Bypass are not predicted to experience any increase in the maximum number of consecutive years fallow with the Proposed Project (DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Figure 10).

Furthermore, as it relates to the impact due to the change in fallowing resulting from the Proposed Project, the DEIR addresses potential impacts to agricultural production as a result of delayed planting, and the potential for subsequent permanent agricultural land conversion to other non-agricultural uses and determined them to be less than significant (see Impacts 3.2-1 and 3.2-2 in DEIR Section 3.2, *Agricultural Resources*). Fallowing of fields/parcels occurs under existing conditions in the Sutter Bypass and does not automatically result in the field being converted to non-agricultural use or a conflict with existing zoning or agricultural use or Williamson Act contracts. Therefore, it is not reasonably foreseeable with implementation of the Proposed Project that an increase of one to two years of fallowing over a 22-year time frame or increasing consecutive fallowing for one to two additional years would result in Farmland being converted to

non-agricultural use, or in a conflict with existing zoning or agricultural use or Williamson Act contract.

For additional information on Proposed Project Sutter Bypass flow and potential impacts on agricultural resources, see Master Comment Response 2.

I4, Lines 105-112

As described in Response I4-16, the DEIR does not say that the Proposed Project could result in a 10 percent change in water coming down the Tisdale Bypass, as stated in the comment. To clarify, the TUFLOW model shows that as a result of the Proposed Project, only 18 out of the 115 farmland fields (approximately 1,026 out of 10,045 acres) in the Sutter Bypass (approximately 10 percent of fields) would, on rare occasion, experience a change in fallowing over a 22-year simulation period.

DWR generally agrees with the commenter in that the magnitude of the potential impacts of the Proposed Project (e.g., additional flow in the Tisdale Bypass) in any given year would largely be determined by the timing of the additional flow (e.g., early in the typical field preparation and sowing season, versus late). This variation in the timing of annual flow and flood events is represented in the TUFLOW model that was used for the analysis of potential Project impacts in the DEIR. The TUFLOW model hydrology input was based upon observed data.

A small, late-season storm is a likely way in which the Proposed Project could affect the Creps property (e.g., a brief, relatively small weir overtopping event triggers the opening of the gate and adds a proportionately large amount of flow to the Tisdale Bypass for a short period). The potential impact of late-season storms was part of the analysis, as the input hydrology for the model accounts for all types of storms that occurred. WY 2017 was one of the wettest on record and flooding occurred throughout the Sutter Bypass for much of that winter; the model predicted fallowing of the Creps fields under the existing conditions in that case. The late-season storm of WY 2011 did affect some of the Creps fields and fallowing was predicted under the Project condition (as shown in Figure 9, Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*).

See also Master Comment Response 2 regarding the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources. See also Response I4-16 for additional explanation

of DEIR conclusions related to impacts to farm fields and agricultural use in the Sutter Bypass.

I4, Lines 113-114

Additional water from the Proposed Project could affect flow in the West Borrow Canal, and the process of flooding by way of the West Borrow Canal was considered and is represented in the TUFLOW model used for the Project analysis. Therefore, the findings on the change in the frequency, extent, and duration of inundation as a result of the Proposed Project capture potential changes in flow from the West Borrow Canal.

As described in DEIR Section 3.2, *Agricultural Resources*, and DEIR Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*, the model domain was defined sufficiently upstream to represent the distribution of flows between the East and West Borrow Canals of the Sutter Bypass (DEIR page 3.2-8 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, page 6) and Weir 1 along the West Borrow Canal is reflected in the model (DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, page 12). Linear features in the model included the Sacramento River, the East and West Borrow Canals, and Butte Slough, and several other canals were represented as one-dimensional model elements (page 11 of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*).

See also Master Comment Responses 2 and 3 and Responses I4-16 and I4-17 for further explanation of the findings in the DEIR related to changes in the frequency, extent, and duration of inundation as a result of the Proposed Project.

I4, Lines 115-117

As described in Response I4-16, the DEIR does not say that the Proposed Project could result in a 10 percent change in water coming down the Tisdale Bypass, as stated in the comment. To clarify, the TUFLOW model shows that as a result of the Proposed Project, only 18 out of the 115 farmland fields (approximately 1,026 out of 10,045 acres) in the Sutter Bypass (approximately 10 percent of fields) would, on rare occasion, experience a change in fallowing over a 22-year simulation period. The change in the frequency, extent, and duration of inundation as it relates to potential Project impacts on agricultural resources and recreation (including duck hunting), including for fields and parcels owned by the commenter, were analyzed with the TUFLOW model and addressed in the DEIR. It is assumed that additional wet (or inundated) days as a result of the Proposed Project would effectively preclude duck hunting, and this assumption and

approach to the analysis of recreation impacts is presented in the DEIR (e.g., pages 3.8-8 and 3.8-9).

Among the Creps parcels, the predicted increase in the number of wet days, on average, ranges from approximately zero to two days per year as result of Project implementation during waterfowl hunting season. For any given Creps parcel and year, the majority (over 90 percent) of the predicted change is three additional wet days or less (Figure 5). For context, the waterfowl hunting season used in the DEIR analysis spans 138 days (from September 28 through February 12). As concluded in Impact 3.8-2, given the seasonal and year-to-year variation in inundation within the Sutter Bypass under existing conditions, it is reasonable that this small, predicted change as a result of the Proposed Project would not result in any substantial loss of recreational opportunities with regard to waterfowl hunting.

The TUFLOW model includes inputs from all sources and accounts for initial overflows of the East Borrow Canal, which may occur earlier than when the Tisdale Weir starts to flow. As stated in Response I4-18, the modes of flooding currently experienced, and also relevant to the assessment of potential Project impacts (e.g., flooding and overflow of the East and/or West Borrow Canals), are represented in the TUFLOW model with topographic and hydrologic data (DEIR page 3.2-8 and Appendix C, pages 6 and 12).

DEIR Impact 3.8-2 (pages 3.8-11 through 3.8-13) and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* discuss the predicted average annual change in the number of wet days compared to existing conditions, by parcel, as a result of the Proposed Project. The analysis concluded that a few lands in the Sutter Bypass may experience a greater number of wet days with the notch than without on the back end of a flood event where the Tisdale Weir has overtopped. For the private waterfowl hunting clubs in the Sutter Bypass on Williamson Act parcels, the predicted increase in the number of wet days, on average, is at most one day per year (i.e., the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for one additional day per year during a 138-day duck hunting season). For all other private parcels within the Sutter Bypass, the predicted increase in the number of wet days during waterfowl season, on average, is at most three days per year (i.e., similarly, the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for up to three additional days per year during a 138-day duck hunting season) (see Table 1 and Figure 12 in Appendix C, *TUFLOW Model Results and CEQA Impacts*

Analysis, of the DEIR). Beyond this, there would be no effective change in water levels during time periods when duck hunting typically occurs.

See also Master Comment Response 3 and Response I4-8 regarding potential impacts on recreation from the Proposed Project.

I4, Lines 118-132

DWR acknowledges the commenter's observations about the existing challenges of farming within an engineered flood bypass system designed to periodically convey large amounts of water and sediment. Land use activities within a floodway are inherently more constrained than for otherwise similar activities on the land side of a levee.

The topography and drainage patterns, including the unique character of the commenter's property (i.e., fields having high and low points, grading to the west, drainage differences, sediment and debris deposits) are represented in the TUFLOW model (which is a hydraulic model that represents the physics of flowing water by a set of generally universal engineering equations). For example, the downhill movement of water and effects of high and low points in the land surface on drainage and/or storage of water is represented in the model. The topography used in the TUFLOW model represented the best available contiguous, contemporary data set for the entire model domain (i.e., the Tisdale and Sutter Bypasses), and this included enforcement of "breaklines" for representing smaller agricultural berms (as noted in DEIR Appendix C, page 10) as well as the delineation of active agricultural fields (as noted in DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* page 15). This representation of the existing topography and drainage within the Tisdale and Sutter Bypasses is the most current contiguous data set and was more than sufficient for the purpose of the analysis, which is to make a relative comparison of existing and Project conditions and determine the potential impacts of the Proposed Project relative to CEQA significance criteria.

See Response I4-5 and Master Comment Response 1 regarding sediment/debris accumulation and movement in the Tisdale and Sutter Bypasses from operation of the Proposed Project.

I4, Lines 133-137

As described in Response I4-12, the dashboard is a convenient, interactive means of querying, displaying, and summarizing a wide array of TUFLOW model output (which could serve multiple purposes). The "dashboard" tool was not intended for determining impacts of the Proposed Project under CEQA. All output from the model is not directly relevant to determination of significance under CEQA; the relevant output was used, per the approach and methodology described in DEIR Sections 3.2 and 3.8 and Appendix C,

TUFLOW Model Results and CEQA Impacts Analysis, to analyze the potential impacts of the Proposed Project under CEQA.

All relevant components of the TUFLOW model outputs, as viewed by the dashboard and generally represented in Attachments A–F to this FEIR, were available to DWR during preparation of the DEIR and were used in the CEQA analysis conducted to evaluate potential impacts to fields/parcels within the Sutter Bypass from the Proposed Project.

As noted in Response I4-20, topography and drainage patterns for the entire Tisdale and Sutter Bypasses are represented in the TUFLOW model used for the analysis presented in the DEIR.

I4, Lines 138-145

Use of 2020 topography of the Tisdale Bypass in the TUFLOW model would not meaningfully change the hydraulics of the bypass or the results of the model. The topography used in the TUFLOW model represented the best available contiguous, contemporary data set for the entire model domain (i.e., the Tisdale and Sutter Bypasses); the use of topographic data from different years for large areas of the model may introduce modeling artifacts and/or discontinuities that would complicate the interpretation of results.

As noted on page 6 in Appendix C*, TUFLOW Model Results and CEQA Impacts Analysis, of the DEIR,* the topographic data used for the TUFLOW model was acquired shortly after a DWR sediment maintenance project in 2007 removed approximately 1.7 million cubic yards of sediment from the Tisdale Bypass (by comparison, the 2020 DWR sediment removal project removed approximately 500,000 cubic yards of sediment from the Tisdale Bypass) and, in part, reflects the results of the periodic sediment maintenance performed by DWR in accordance with California Water Code Section 8361.

As described in Section 2.2.3, *Topographic and Bathymetric Survey Data,* of Appendix C of the DEIR, the TUFLOW model existing conditions terrain in the Tisdale and Sutter Bypasses comes from a variety of sources and represented the best available information. Moreover, it is critical to understand the fundamental importance of (1) comparative modeling, and (2) best available data. Comparative modeling is where two condition states are modeled and then compared to discern the differences between the two; in this instance, the different conditions are (a) existing hydrologic conditions at Tisdale Weir, and (b) hydrologic conditions at the Tisdale Weir with the addition of proposed notch operations. In this comparative modeling, it is vital to keep all other assumptions fixed so that the signal of

the change can be identified. The standard practice in this regard is to use the best available data that represent the boundary conditions for the model domain for the period of record being simulated. This is done using the same topography and other boundary conditions, so that model calibration is feasible and consistent and the change from the two different model runs (existing conditions versus Proposed Project conditions) can be clearly assessed. It is extraordinarily rare for a modeling assessment that is making simulations across multiple years (let alone more than two decades) to have available topography, bathymetry, and other boundary condition information available for each year simulated (in other words, all of these data were collected and or/surveyed for each of those years). As described in Section 2.2.3, *Topographic and Bathymetric Survey Data*, of Appendix C of the DEIR, the existing conditions data come from a variety of sources; however, the primary topographic data source is the 2010 CVFED LiDAR data, which comprise most of the Tisdale and Sutter Bypasses. Collection of LiDAR data to represent the ground surface, particularly within the Sutter Bypass, can be complicated by a number of factors, including residual ponding and flooding (e.g., in the Sutter National Wildlife Refuge or within duck clubs) as well as very thick vegetation (e.g., a mature rice crop). The 2010 LiDAR data are considered the most-robust available data because these data were subject to considerable post-processing and related analyses in order to refine the final topographic surface; therefore, they represent the best available, most contiguous, contemporary data set for the majority of the model domain. The TUFLOW model also included enforcement of "breaklines" for representing smaller agricultural berms (see page 10 of Appendix C of the DEIR) as well as the delineation of active agricultural fields (see page 15 of Appendix C of the DEIR).

The 2020 sediment removal project was a different project and subject to its own environmental review (i.e., Tisdale Bypass Sediment Removal 2020 Project IS/MND, State Clearinghouse Number 2020019015), and permitting process. The DEIR analyzed the Tisdale Weir Rehabilitation and Fish Passage Project (the Proposed Project), and the potential changes in sedimentation as a result of the Proposed Project were analyzed and addressed in the DEIR (Impacts 3.7-2 and 3.7-3 in Section 3.7, *Hydrology*, and Chapter 5, *Alternatives*).

See Master Comment Response 1 regarding Tisdale Bypass maintenance.

I4, Lines 146-150

The DEIR adequately describes the additional volume, frequency, and duration of flow (to the Sutter Bypass) through the notch as a result of the Proposed Project and the TUFLOW model does provide this information. Table 5-4 on page 5-25 in DEIR Chapter 5, *Alternatives*, presents the

predicted change in flow volume, frequency, and duration (to the Sutter Bypass) through the notch as a result of the Proposed Project, aggregated by water year type. Under the No Project Alternative, an average of 838,412 acre-feet of water would pass over the weir annually, compared to 924,569 acre-feet with the Proposed Project. As described in Attachment A of Appendix C, *TUFLOW Model Results and CEQA Impact Analysis,* of the DEIR, this additional flow was explicitly included in the TUFLOW modeling completed to assess the potential effects of the Proposed Project. Attachment A to this FEIR illustrates Tisdale Weir flow hydrographs for existing and Proposed Project conditions.

For each year and season within the analysis period (WY 1997–2018), the TUFLOW model was used to calculate the number of wet days for fields and parcels for existing and Proposed Project conditions. As described in the DEIR (pages 3.2-12 and 3.3-8 to 3.3-9), a wet day assumes the given field or parcel is inundated at a depth of at least 0.1 feet over at least 30 percent of its area, and is effectively considered inundated on that day for purposes of the analysis presented in the DEIR. Thus, as a metric, the number of wet days comprises both a frequency and a duration (e.g., for how long was the parcel/ field inundated). Further, the extent of inundation is similarly built into the TUFLOW model results, both at the field/parcel scale and at the scale of the entire Tisdale and Sutter Bypasses (e.g., 30 percent of the individual field/parcel must be inundated to be considered wet, and the calculation is made for all fields/parcels, individually, throughout the Tisdale and Sutter Bypasses). For the purposes of evaluating the CEQA significance criteria for impacts on agricultural resources and recreation, the frequency and duration of inundation, particularly the number of days a given field/parcel may be inundated in a particular year and how that may change, is relevant to the impact discussion.

See also Responses I4-7 and I4-8 and Master Comment Responses 2 and 3 regarding the TUFLOW Model inputs; change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project; and the potential impacts with respect to agricultural resources and recreation, respectively.

I4, Lines 151-169

The DEIR analyzed and identified all Proposed Project impacts mentioned by the commenter upon the referenced fields (i.e., regardless of whether it was an additional two wet days or 59 days) and the analysis is not incorrect. Regardless of the number of additional wet days, the DEIR assumed that the fields were affected for the year and would be fallowed. Therefore, the commenter's statement regarding which fields are wet, or drain, and when, as based on their experience, is not relevant to the outcome of the analysis

in these cases. Further, the representation of the existing topography and drainage within the Tisdale and Sutter Bypasses is the most current contiguous data set and was more than sufficient for the purpose of the analysis, which is to make a relative comparison of existing and Project conditions and determine the potential impacts of the Proposed Project relative to CEQA significance criteria (see also Responses I4-11 and I4-20).

In addition, DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Figure 9 (page 25) is not indicating the additional number of wet days as stated in the comment, but rather the difference in the date of the last wet day (i.e., the number of days between the predicted last day wet under existing conditions and the predicted last day wet under Proposed Project conditions). For example, in the case of Fields 0 through 6, which the commenter states are the northernmost Creps fields, those fields dry out shortly after the sustained March/April 2011 spill event that caused flooding under existing conditions (see DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Figure 2, page 5). However, because of the very brief Tisdale Weir spill event in June 2011 (again, see DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Figure 2, page 5), those fields would have become wet again under Project conditions due to the increased flow through the notch (i.e., this brief event was not long or large enough to induce flooding under existing conditions). Thus, the last day wet under Project conditions would be 58–59 days later than under the existing condition (although this does not mean the fields were wet for an additional 58–59 days).

For Field 13, which the commenter states is their smallest field, the additional flow during the June 2011 spill event was not enough to force additional flooding for this particular field, and it was subject to only two additional days of flooding as a result of the March/April 2011 event, which pushed the last day wet under Project conditions out by two days at the end of April 2011.

Similar to the above discussion regarding Field 13 in 2011, on Fields 15, 16, 81, and 82, which the commenter states are their fields that are routinely the wettest, the last day wet was extended under Project conditions by just a few days following a Tisdale Weir spill event. This is the most typical manner of impact, e.g., after the Tisdale Weir stops spilling the flow through the notch is enough to keep some fields wet for a few additional days, then the flow through the notch recedes to a point where it can no longer affect any fields (and eventually the notch/gate would close). The June 2011 weir spill event was brief, so perhaps that is why Fields 0 through 6, typically the first to receive water (as pointed out by the

commenter), were the only ones predicted to be affected by the brief, somewhat anomalous June 2011 spill event. In general, the variable predicted effects on Fields 15, 81, and 82 in different years (Field 16 is not predicted to be fallowed), as referenced by the commenter, can be attributed to a number of things, including variable timing in spill events and antecedent conditions on a given field, and/or a subtle variation in how each field drains.

I4, Lines 170-174

For the analysis of potential Project impacts, the TUFLOW model results does not present analysis seemingly random years as the commenter suggests. TUFLOW model results were assessed for each day over the simulation period (WY 1997–2018). The results presented in DEIR Appendix C are specific to the relevant metrics identified in the impact analysis methodology. Results are presented for all water years, either averaged by parcel or summed by field (e.g., DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* Table 1 and Figures 11 and 12, and the left two panels in Figures 9 and 10). In Figures 9 and 10, only years and fields for which an impact was identified are called out in the rightmost panel.

As described in Response I4-12, the dashboard is a convenient, interactive means of querying, displaying, and summarizing a wide array of TUFLOW model output (which could serve multiple purposes). The "dashboard" tool was not intended for determining impacts of the Proposed Project under CEQA. All output from the model is not directly relevant to determination of significance under CEQA; relevant output was used, per the approach and methodology described in DEIR Sections 3.2 and 3.8 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* to analyze the potential impacts of the Proposed Project under CEQA.

All relevant components of the TUFLOW model outputs, as viewed by the dashboard and generally represented in Attachments A–F to this FEIR, were available to DWR during preparation of the DEIR and were used in the CEQA analysis conducted to evaluate potential impacts to fields/parcels within the Sutter Bypass from the Proposed Project.

See also Master Comment Response 2 regarding the TUFLOW model development.

I4, Lines 175-185

As described in Response I4-12, the dashboard is a convenient, interactive means of querying, displaying, and summarizing a wide array of TUFLOW model output (which could serve multiple purposes). The "dashboard" tool was not intended for determining impacts of the Proposed Project under

CEQA. All output from the model is not directly relevant to determination of significance under CEQA; relevant output was used, per the approach and methodology described in DEIR Sections 3.2 and 3.8 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* to analyze the potential impacts of the Proposed Project under CEQA.

All relevant components of the TUFLOW model outputs, as viewed by the dashboard and generally represented in Attachments A–F to this FEIR, were available to DWR during preparation of the DEIR and were used in the CEQA analysis conducted to evaluate potential impacts to fields/parcels within the Sutter Bypass from the Proposed Project.

See also Master Comment Response 2 regarding the TUFLOW model development.

I4, Lines 186-191

The DEIR explains the effect of weir hydraulics on the "hinge" point (see Appendix H, *Sediment Budget Analysis Technical Memorandum,* page 10) and maintenance of the hinge point would not be necessary to limit or reduce the Proposed Project's potential impacts. Therefore, the maintenance of the hinge point would not be necessary for the Proposed Project to operate as proposed and is not part of the Proposed Project

The hinge point is a persistent topographic feature (i.e., a subtle area of high ground) driven by weir hydraulics, whereby an area of scour forms directly downstream of a weir, a subsequent higher elevation area forms just downstream of this, and then the topography typically drops off slightly once again, thus forming a higher "hinge" point. This effect of weir hydraulics is discussed in the DEIR (e.g., Appendix H, page 10) and is well documented both generally and in relation to the Sacramento River weirs by Singer and Aalto (2009) and Singer et al. (2008). The presence of this feature (the hinge point) in the Tisdale Bypass is evident in topographic maps dated as early as 1924.

Monitoring and maintenance of the hinge point would not be necessary to limiting the Proposed Project's potential impacts or making potential impacts less severe, because when the river water surface recedes to an elevation range near that of the hinge point, the flow moving through the notch (and thus down the Tisdale Bypass) would be less than approximately 200 cfs (see Figure 6 of Attachment A, *Tisdale Weir 1D HEC-RAS Modeling,* of DEIR Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*), and the TUFLOW model did not show any impacts near this flow range. Thus, even were the hinge point to be eroded (which is not anticipated given that this feature is formed by depositional forces, not

erosional forces), the flow down the bypass when the hinge point becomes relevant would be very minimal and not result in flooding. For context, the predicted peak flow through the notch is approximately 3,200 cfs (see Figure 6 of Attachment A, *Tisdale Weir 1D HEC-RAS Modeling,* of DEIR Appendix C, *TUFLOW Model Results and CEQA Impact Analysis*).

See also Master Comment Response 1 regarding the "hinge" point.

I4, Lines 192-193

Responses to comments about the DEIR's evaluation of potentially significant impacts to Sutter Bypass agriculture and recreation are provided in Responses 14-29 through I4-38.

I4, Lines 194-203

The commenter states that excessive flooding would limit access to their duck club. TUFLOW model output, which underlies the analysis presented in the DEIR, is included as a part of Master Comment Responses 2 and 3 (and Attachments A–F to this FEIR). Information specific to the Creps parcels is also summarized by water year type and presented separately here as Figure 3 and Figure 4.

- As shown in Figure 3, during existing wet days hunting would generally be precluded, e.g., looking at the averages by water year type, over two-thirds of each Creps parcel is completely inundated at a depth of well beyond 11 inches.

- Among dry days (which are assumed to be conducive for waterfowl hunting, management of on-site water levels, etc.), there is no real change induced by the Proposed Project (e.g., the parcel remains dry, as indicated by the existing and Project condition inundated areas shown in Figure 4). The mode of impact, as described in the DEIR, is when the Proposed Project would result in a dry day changing to a wet day. The impact of the Proposed Project tends to be an "all or nothing" type, i.e., it either results in flooding the parcel or it does not. Among the Creps parcels, the predicted increase in the number of wet days, on average, ranges from approximately zero to two days per year as result of Project implementation during waterfowl hunting season.

- For any given Creps parcel and year, the majority (over 90 percent) of the predicted change is three additional wet days or less (Figure 5).

For context, the waterfowl hunting season used in the DEIR analysis spans 138 days (from September 28 through February 12). As concluded in DEIR Impact 3.8-2, given the seasonal and year-to-year variation in inundation within the Sutter Bypass under existing conditions, there is nothing to suggest that this small, predicted change as a result of the Proposed Project

would result in any substantial loss of recreational opportunities with regard to waterfowl hunting, or result in substantial repairs to submerged blinds or roads as stated in the comment.

As noted in the Methods of Analysis in DEIR Section 3.8.4 (page 3.8-8), the Sutter Bypass is a floodway that conveys floodwaters and frequently inundates duck hunting sites within the Sutter Bypass (without the Proposed Project) at depths considerably greater than a few feet and closes access roads. When the sites are not inundated by floodwaters, some areas are actively managed (via diversion and pumping) to generate the desired, shallow-flooded habitat (optimal water depth is typically 18 inches).

To assess any potential flow-related impacts of the Proposed Project, a comparative assessment of the additional wet days resulting from increased flows from the Proposed Project was used as a proxy for a lack of access/too wet to hunt. The term wet day assumes the given field or parcel is inundated at a depth of at least 0.1 feet over at least 30 percent of its area, and is effectively considered inundated on that day for purposes of the analysis presented in the DEIR. Thus, as a metric, a wet day comprises inundation extent, water depth, and duration (see also Master Comment Response 3 and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*).

DEIR Impact 3.8-2 (pages 3.8-11 through 3.8-13) and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* discuss the predicted average annual change in the number of wet days compared to existing conditions, by parcel, as a result of the Proposed Project. For the private waterfowl hunting clubs in the Sutter Bypass on Williamson Act parcels, the predicted increase in the number of wet days, on average, is at most one day per year (i.e., the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for one additional day per year during a 138-day duck hunting season). For all other private parcels within the Sutter Bypass, the predicted increase in the number of wet days during waterfowl season, on average, is at most three days per year (i.e., similarly, the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for up to three additional days per year during a 138-day duck hunting season) (see Table and Figure 12 in Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, of the DEIR). Beyond this, there would be no effective change in water levels during time periods when duck hunting typically occurs.

See also Master Comment Response 3 and Response I4-8 for additional information on Proposed Project Sutter Bypass flow and potential impacts on recreation.

I4, Lines 204-208

The duck club is not considered a historical resource. To qualify as historically significant under CEQA, physical elements associated with the organization (such as a building, structure, site, or object) would need to be present for evaluation. A "site" typically means an archaeological site, but can also refer to a designed landscape. Online research failed to identify any permanent structures associated with the duck club within the Area of Potential Effects. While the club itself, as a name or entity, may be 100 years old and may have been based on the property/location since that time as indicated in Attachment 1 of the comment letter, there is no physical structure to evaluate as a historical resource. All of the physical, man-made elements in the area (e.g., the Sutter Bypass, the levees, the canals) are associated specifically with the bypass, not the duck club.

Historic landscapes have the following specific criteria that need to be met to be considered:

- Designed by a master gardener/landscaper based on design principles.
- Landscape that evolved through use by people, where the function is clearly reflected in the landscape (like farms or industrial complexes).
- Landscapes that are significant for their association with events, activities, or people (like battlefields).
- Ethnographic landscapes associated with cultural heritage of some kind.

Without a clubhouse or any other physical structures associated with the duck club, or specifically man-made landscaping tied directly to the club, there is no evidence of function. The duck club does not fit the criteria to be considered a historic landscape.

Given that all of the physical evidence of the duck club located in the Sutter Bypass is washed away during flood events, or are physical elements associated with flood control in the bypass (e.g., levees, canals, access roads), there is not any actual historic evidence of the duck club. Therefore, it is not considered a historical resource.

I4, Lines 209-220

DWR acknowledges the commenter's observations about the existing challenges of farming within an engineered flood bypass system designed to periodically convey large amounts of water and sediment. Land use

activities within a floodway are inherently more constrained than for otherwise similar activities on the land side of a levee.

The DEIR addressed the potential for increased sedimentation and concluded that the potential increase in sediment discharge and deposition would not result in a significant impact because it is within the historical range of sediment removed by DWR in the Tisdale Bypass through existing O&M activities. See Responses I4-5 and I4-9 and Impacts 3.7-2 and 3.7-3 in DEIR Section 3.7, *Hydrology*, and Chapter 5, *Alternatives*. Wood debris is also addressed in the DEIR (e.g., see DEIR Chapter 5, *Alternatives*, as well as Appendix J, *Engineering Feasibility Report*, and Appendix B, *Large Wood Debris at Tisdale Weir Technical Memorandum*) and is not expected to be changed or substantially effected by the Proposed Project.

The 2007 and 2020 sediment removal projects were different projects, independent from the Proposed Project, and were subject to their own environmental review (Tisdale Bypass Channel Rehabilitation Project 2007 IS/MND, State Clearinghouse Number 2007022044, and Tisdale Bypass Sediment Removal 2020 Project IS/MND, State Clearinghouse Number 2020019015) and permitting processes. The DEIR analyzed the Tisdale Weir Rehabilitation and Fish Passage Project (the Proposed Project), and the potential changes in sedimentation as a result of the Proposed Project were analyzed and addressed in the DEIR (Section 3.7, *Hydrology*, and Chapter 5, *Alternatives*).

For additional information on Tisdale Bypass O&M, see also Master Comment Response 1.

I4, Lines 221-224

DWR acknowledges the commenter's observations about the existing challenges of maintaining hunting blinds within an engineered flood bypass system designed to periodically convey large amounts of water and sediment. Land use activities within a floodway are inherently more constrained than for otherwise similar activities on the land side of a levee.

The change in Tisdale Bypass flow as a result of the Proposed Project and the potential impacts with respect to inundation on downstream properties are addressed in the DEIR (Impacts 3.7-2 and 3.7-3 in Section 3.7, *Hydrology*, and Chapter 5, *Alternatives*).

As described in Response I4-31, the 2007 and 2020 sediment removal projects were different projects, independent from the Proposed Project, and were subject to their own environmental review (Tisdale Bypass Channel Rehabilitation Project 2007 IS/MND, State Clearinghouse Number

2007022044, and Tisdale Bypass Sediment Removal 2020 Project IS/MND, State Clearinghouse Number 2020019015) and permitting processes.

See also Response I4-32. For additional information on Tisdale Bypass O&M, see also Master Comment Response 1.

I4, Lines 225-231 The information on past sediment and debris removal and associated field preparation on the Creps Farm is noted.

I4, Lines 232-244 The comment is directed toward economic impacts from the Proposed Project, which do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

See Master Comment Response 1 regarding sediment/debris accumulation and movement in the Tisdale and Sutter Bypasses from operation of the Proposed Project.

I4, Lines 244-251 The additional volume of sediment that may be delivered to the Tisdale Bypass (and ultimately the Sutter Bypass) as a result of the Proposed Project is, in any given year or cumulatively, a very small volume of sediment compared to the downstream area of delivery and is within the range of existing conditions. Therefore, sediment removal in the Sutter Bypass is not included as part of the Proposed Project. As stated in Response I4-9, for context, if all the additional sediment predicted to be delivered over a 10-year period as a result of the Proposed Project (approximately 136,000 cubic yards; see Tables 2 and 3 in Appendix H, *Sediment Budget Analysis Technical Memorandum,* of the DEIR) were to be spread over approximately 1,000 acres (which would represent something similar to the Creps property and only a small fraction of the Sutter Bypass area), it would equate to a depth of less than 0.08 feet. Even this relatively small depth value should be considered a very conservative estimate, as it is unrealistic to assume all the sediment delivered would be

deposited and it is further unrealistic to assume that it would all be deposited over such a small area. For comparison, the combined bottom area of the Tisdale Bypass and the Sutter Bypass (that portion from the Tisdale Bypass downstream) is approximately 12,800 acres.

No change in the delivery or deposition of woody debris was predicted as a result of the Proposed Project and these processes would remain within the range of existing conditions. DEIR Chapter 5, *Alternatives*, as well as Appendix B, *Large Wood Debris at Tisdale Weir Technical Memorandum*, of Appendix J, *Engineering Feasibility Report*, of the DEIR, evaluated large wood debris (LWD) accumulation in the area along Tisdale Weir under existing conditions and with the Proposed Project.

As noted in Responses I4-5 and I4-9 and Impact 3.7-3 in DEIR Section 3.7, *Hydrology*, and DEIR Appendix H, *Sediment Budget Analysis Technical Memorandum*, the Proposed Project would increase the volume of sediment deposited in the Tisdale Bypass by approximately 8–9 percent over 10 years; this amount of expected deposition is within the historical range of sediment removed by DWR in the Tisdale Bypass through existing O&M activities. The DEIR therefore concludes that this is not a significant impact under CEQA and the Project's incremental contributions to cumulative effects (in particular on receiving water quality from the release of sediment during operation) would not be cumulatively considerable (Impact 3.7-7).

As further stated in Response I4-5 and DEIR Chapter 1, Introduction, DWR performs periodic vegetation and/or sediment maintenance within the Tisdale Bypass in accordance with California Water Code Section 8361. The maintenance objectives are governed by the Operations and Maintenance Manuals developed by USACE as part of the Sacramento River Flood Control Project. Further, at a programmatic level, the current DWR maintenance activities have environmental (CEQA) and permitting coverage under the Environmental Permitting for Operation and Maintenance or EPOM Program (2018 EIR State Clearinghouse Number 2015052035). Sediment maintenance in the Tisdale and Sutter Bypasses will occur as currently practiced, with or without the Proposed Project. The DEIR does not predict a substantial increase in sediment deposition (DEIR page 3.7- 21), nor does the Proposed Project propose sediment removal in the Tisdale or Sutter Bypasses. Sediment and debris removal for the Proposed Project would only occur in the footprint for the Proposed Project (DEIR Figure 2-2) to maintain fish passage conditions.

For additional information on Tisdale Bypass O&M and sediment/debris accumulation and movement in the Tisdale and Sutter Bypasses from operation of the Proposed Project, see Master Comment Response 1.

I4, Lines 252-257

The commenter states that increased inundation from Project facilities would adversely affect agricultural production on their farm fields. The predicted change in the number of wet days as a result of the Proposed Project is relatively small and would not result in additional flooding extending deep into the planting season and cause fallowing. Specifically:

- Over the 22-year model simulation, the analysis predicted one additional year of fallowing compared to existing conditions for 11 of the Creps fields (out of the total 15 for all of the Sutter Bypass) and two additional years of fallowing for one of the Creps fields (out of the total three for all of the Sutter Bypass) as a result of Project operation.

- The maximum number of *consecutive* years fallow is predicted to go from two years to three years only for Field No. 17. The remaining Creps fields are not predicted to experience any increase in the maximum number of *consecutive* years fallow with the Proposed Project (observed fallow years are shown in Attachment B of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis;* the predicted change maximum consecutive fallow years are shown in Figure 10 of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*, Figure 10).

As stated in Responses I4-7 and I4-9, among the Creps fields, in many years (over half), the predicted change in wet days would not result in a noticeable change, as the given field either remains dry under both conditions (Proposed Project and Existing) or is already fallowed under Existing conditions (Figure 2). For the remaining years, the vast majority of the predicted changes are less than or equal to four additional wet days (Figures 1 and 2). Collectively, over 90 percent of the predicted change (considering each Creps field and each year) is either not noticeable or less than or equal to four additional wet days. Thus, most of the predicted change in the number of wet days was relatively small and would not result in additional flooding extending deep into the planting season.

The DEIR evaluates potential impacts to agricultural production as a result of delayed planting and, more specifically, the potential for subsequent land conversion to other non- agricultural uses (see DEIR Section 3.2, *Agricultural Resources*). Further, consistent with what the commenter asserts, the DEIR analysis assumes the ideal plant-by date is April 29 and

the last day to plant without fallowing is June 1 (see DEIR page 3.2-10). For 12 of the 26 Creps fields, in one year (out of 22), the predicted increase in the number of wet days delays the assumed planting date such that the field is predicted to be fallowed under the Project condition (these are shown in Figure 9 and Figure 10 of DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*); most of these instances are in WY 2011, which experienced a brief, late-season (June) weir overtopping event that resulted in late-season flooding of some of the Creps fields.

As stated in Response I4-16, the Proposed Project could temporarily affect up to approximately 10 percent of Sutter Bypass farmland fields over a 22-year simulation period, resulting in one additional year of fallowing for 15 out of 115 total fields (or 10 percent of the fields) for any given year with the Proposed Project and two additional years of fallowing for three out of the 115 total fields (or 2 percent of the fields) (see DEIR page 3.2-15 in Section 3.2, *Agricultural Resources,* and DEIR Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*). Fallowing of fields/parcels occurs under existing conditions and fallowing of a field/parcel does not automatically mean that the field is converted to non-agricultural use or conflict with existing zoning or agricultural use or Williamson Act contracts. Therefore, it is not reasonably foreseeable that an increase of one to two years of fallowing over a 22-year time frame or increasing consecutive fallowing for one to two additional years would result in Farmland being converted to non-agricultural use, or in a conflict with existing zoning or agricultural use or Williamson Act contract, because the amount of fallowing (or temporary crop idling) by the Proposed Project already occurs under existing conditions.

As noted in Responses I4-5 and I4-9, Impact 3.7-3 in DEIR Section 3.7, *Hydrology,* and DEIR Appendix H addressed the potential for increased sedimentation as a result of the Proposed Project and concluded that an approximately 8–9 percent increase in sediment deposition could occur over 10 years, which is within the historical range of sediment removed by DWR in the Tisdale Bypass through existing O&M activities; the DEIR therefore concludes that this is not a significant impact under CEQA.

See also Master Comment Response 2 regarding the change frequency, extent, and duration of water in the Tisdale Bypass and downstream areas as a result of the Proposed Project and the potential impacts with respect to agricultural resources.

I4, Lines 257-261 The comment is directed toward economic impacts from the Proposed Project, which do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

I4, Lines 262-266 DWR acknowledges the commenter's observations about the existing challenges of farming within an engineered flood bypass system designed to periodically convey large amounts of water and sediment. Land use activities within a floodway are inherently more constrained than for otherwise similar activities on the land side of a levee.

The DEIR addressed the potential flow- and sediment-related impacts of the Proposed Project on fields and parcels within the Sutter Bypass, including those owned by the commenter. See also Responses I4-5, I4-7, I4-9, I4-11, I4-16, and I4-36 and Master Comment Response 1.

I4, Lines 267-274 In the analysis of agricultural resources, the DEIR addresses the factors that the commenter is referencing, i.e., potential impacts of increased flow on agricultural production as a result of delayed planting, and the potential for subsequent land conversion to other non-agricultural uses. Further, consistent with what the commenter asserts, the DEIR analysis assumes the ideal plant-by date is April 29 and the last day to plant without fallowing is June 1. See also Responses I4-5, I4-7, I4-9, and I4-23.

I4, Lines 274-277 The comment is directed toward economic impacts from the Proposed Project, which do not constitute or contribute directly or indirectly to an effect on the physical environment. As described in State CEQA Guidelines Section 15131, economic impacts shall not be treated as significant effects on the environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with

	all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.
I4, Lines 278-285	DWR appreciates the background information provided on Creps' discussions to restore salmon and bird habitat on their property.
I4, Lines 286-301	Responses I4-4 through I4-39 provide information specific to the Creps property and information specific to the Creps fields are also summarized and presented below as Figure 1 and Figure 2.
I4, Lines 302-304	DWR will notify the commenter when the FEIR is complete, and where she may review responses to comments.
I4, Lines 305-307	DWR will provide a copy of the Notice of Determination to the commenter. The contact information provide is noted.

Figure 1: Field Prep Sowing Season Summary WYs 1997 - 2018

Majority Owner (by Area)	APN	Field ID	Change in Number of Wet Days (days)																					Avg. Change in No. of Wet Days (days)	Avg. Change in No. of Wet Days (days)				
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		Wet	Above Normal	Below Normal	Dry	Critical
Majority Owner (by Area)																														
CREPS REV '05 TR ETAL	21-240-031	0	-	-	4	3	1	-	-	2	-	-	-	1	0	3	7	0	-	-	-	1	-	1	2.1	5.5	3.0	1.4	0.5	1.0
CREPS REV '05 TR ETAL	21-240-031	1	1	-	1	2	0	-	-	3	-	-	0	0	0	13	16	1	-	-	-	1	-	1	3.0	6.0	2.0	3.8	0.0	0.0
CREPS REV '05 TR ETAL	21-240-029	2	1	-	1	2	1	-	-	3	-	-	1	1	0	12	18	0	-	-	-	1	-	1	3.2	6.7	2.0	3.4	0.7	1.0
CREPS REV '05 TR ETAL	21-240-029	3	-	-	4	1	0	-	-	2	-	-	-	1	0	-	6	1	-	-	-	2	-	4	2.1	5.0	1.0	2.3	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	4	-	-	2	3	1	-	-	2	-	-	-	1	0	-	1	2	-	-	-	1	-	1	1.3	1.5	3.0	1.5	0.5	0.0
CREPS REV '05 TR ETAL	21-240-016	5	1	-	1	3	0	-	-	2	-	-	0	1	0	12	18	1	-	-	-	1	-	0	3.1	6.7	3.0	3.2	0.0	1.0
CREPS REV '05 TR ETAL	21-240-028	6	-	-	3	2	0	-	-	2	-	-	-	1	0	-	6	1	-	-	-	2	-	0	1.7	4.5	2.0	1.3	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	7	1	-	1	2	1	-	-	2	-	-	0	1	0	1	-	10	-	-	1	1	-	-	1.8	1.0	2.0	3.5	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	8	1	-	1	3	1	-	-	2	-	-	0	1	0	1	-	27	-	-	1	2	-	-	3.3	1.0	3.0	8.0	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	9	1	-	1	3	0	-	-	2	-	-	0	1	0	1	9	10	-	-	1	2	-	1	2.3	3.7	3.0	3.2	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	10	1	-	1	4	1	-	-	3	-	-	0	2	0	5	-	8	-	-	1	1	-	-	2.3	1.0	4.0	4.3	0.3	1.5
CREPS REV '05 TR ETAL	21-240-016	11	1	-	1	3	0	-	-	2	-	-	0	1	0	2	-	10	-	-	1	1	-	-	1.8	1.0	3.0	3.8	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	12	1	-	2	2	0	-	-	3	-	-	0	1	1	2	-	-	-	-	1	2	-	-	1.4	1.5	2.0	2.3	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	13	1	-	1	3	1	-	-	3	-	-	0	1	0	1	2	-	-	-	2	1	-	0	1.2	1.3	3.0	1.3	0.3	1.5
CREPS REV '05 TR ETAL	21-240-016	14	1	-	2	3	1	-	-	3	-	-	0	1	1	14	-	-	-	-	1	3	-	-	2.7	1.5	3.0	6.7	0.7	1.0
CREPS REV '05 TR ETAL	21-240-007	15	1	-	1	3	0	-	-	3	-	-	1	2	0	3	-	-	-	-	1	2	-	-	1.5	1.0	3.0	2.7	0.3	1.5
CREPS REV '05 TR ETAL	21-240-007	16	2	-	-	-	1	-	-	3	-	-	0	-	0	2	-	-	-	-	1		-	-	1.3	2.0	-	2.5	0.3	1.0
CREPS REV '05 TR ETAL	21-240-007	17	1	-	-	3	1	-	-	2	-	-	0	-	0	14	-	18	-	-	2	2	-	-	4.3	1.0	3.0	9.0	0.3	2.0
CREPS REV '05 TR ETAL	21-240-016	18	1	-	1	4	2	-	-	3	-	-	0	1	0	2	-	-	-	-	1	1	-	-	1.5	1.0	4.0	2.0	0.7	1.0
CREPS REV '05 TR ETAL	21-240-001	19	3	-	2	3	1	-	-	3	-	-	1	1	1	14	-	4	-	-	2	2	-	-	3.1	2.5	3.0	5.8	1.0	1.5
CREPS REV '05 TR ETAL	21-240-001	20	1	-	2	3	1	-	-	3	-	-	0	2	0	17	-	4	-	-	1	2	-	-	3.0	1.5	3.0	6.5	0.3	1.5
CREPS REV '05 TR ETAL	21-240-007	21	1	-	2	2	0	-	-	3	-	-	1	1	0	16	-	4	-	-	1	1	-	-	2.7	1.5	2.0	6.0	0.3	1.0
CREPS REV '05 TR ETAL	21-240-001	22	1	-	2	3	1	-	-	3	-	-	0	1	0	17	-	3	-	-	1	2	-	-	2.8	1.5	3.0	36.3	0.3	1.0
CREPS REV '05 TR ETAL	21-240-001	23	0	-	1	0	0	-	-	1	-	-	-	0	0	0	-	0	-	1	-	1	-	0	0.3	0.5	0.0	0.4	0.0	0.5
CREPS REV '05 TR ETAL	21-240-007	81	0	-	-	2	1	-	-	2	-	-	0	-	0	12	-	-	-	-	1	1	-	-	2.1	0.0	2.0	5.0	0.3	1.0
CREPS REV '05 TR ETAL	21-240-007	82	1	-	2	2	1	19	-	3	-	-	1	1	0	6	-	3	-	-	1	1	-	-	3.2	1.5	2.0	3.3	5.3	1.0

Project predicted to extend the last day wet beyond 4/28 and result in following (per Figure 9, Appendix C, TUFLOW Model Results and CEQA Impact Analysis).

Figure 2: Field Prep Sowing Season Summary WYs 1997 - 2018

Majority Owner (by Area)	APN	Field ID	Change in Number of Wet Days (days)																					Avg. Change in No. of Wet Days (days)	Avg. Change in No. of Wet Days (days)				
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		Wet	Above Normal	Below Normal	Dry	Critical
Majority Owner (by Area)																														
CREPS REV '05 TR ETAL	21-240-031	0	-	-	1	3	1	-	-	2	-	-	-	1	0	4	58	0	-	-	-	1	-	1	6.5	5.5	3.0	1.4	0.5	1.0
CREPS REV '05 TR ETAL	21-240-031	1	1	-	1	2	0	-	-	3	-	-	0	0	0	14	59	1	-	-	-	1	-	1	6.4	6.0	2.0	3.8	0.0	0.0
CREPS REV '05 TR ETAL	21-240-029	2	1	-	1	2	1	-	-	3	-	-	1	1	0	12	58	0	-	-	-	1	-	1	6.3	6.7	2.0	3.4	0.7	1.0
CREPS REV '05 TR ETAL	21-240-029	3	-	-	1	1	0	-	-	2	-	-	-	1	0	-	58	1	-	-	-	2	-	1	6.7	5.0	1.0	2.3	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	4	-	-	0	3	0	-	-	2	-	-	-	1	0	-	1	32	-	-	-	1	-	1	4.1	1.5	3.0	1.5	0.5	0.0
CREPS REV '05 TR ETAL	21-240-016	5	1	-	1	3	0	-	-	2	-	-	0	1	0	12	59	1	-	-	-	1	-	0	6.2	6.7	3.0	3.2	0.0	1.0
CREPS REV '05 TR ETAL	21-240-028	6	-	-	1	2	0	-	-	2	-	-	-	1	0	-	58	1	-	-	-	2	-	0	6.7	4.5	2.0	1.3	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	7	1	-	1	2	1	-	-	2	-	-	0	1	0	1	-	40	-	-	1	1	-	-	4.3	1.0	2.0	3.5	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	8	1	-	1	3	1	-	-	2	-	-	0	1	0	1	-	57	-	-	1	2	-	-	5.8	1.0	3.0	8.0	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	9	1	-	1	3	0	-	-	2	-	-	0	1	0	1	47	10	-	-	1	2	-	1	5.0	3.7	3.0	3.2	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	10	1	-	1	4	1	-	-	3	-	-	0	2	0	5	-	8	-	-	1	1	-	-	2.3	1.0	4.0	4.3	0.3	1.5
CREPS REV '05 TR ETAL	21-240-016	11	1	-	1	3	0	-	-	2	-	-	0	1	0	2	-	40	-	-	1	1	-	-	4.3	1.0	3.0	3.8	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	12	1	-	2	2	0	-	-	3	-	-	0	1	1	2	-	-	-	-	1	2	-	-	1.4	1.5	2.0	2.3	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	13	1	-	1	3	1	-	-	3	-	-	0	1	0	1	2	-	-	-	2	1	-	0	1.2	1.3	3.0	1.3	0.3	1.5
CREPS REV '05 TR ETAL	21-240-016	14	1	-	2	3	1	-	-	3	-	-	0	1	1	14	-	-	-	-	1	3	-	-	2.5	1.5	3.0	6.7	0.7	1.0
CREPS REV '05 TR ETAL	21-240-007	15	1	-	1	3	0	-	-	3	-	-	1	2	0	3	-	-	-	-	1	2	-	-	1.5	1.0	3.0	2.7	0.3	1.5
CREPS REV '05 TR ETAL	21-240-007	16	2	-	-	-	1	-	-	3	-	-	0	-	0	2	-	-	-	-	1		-	-	1.3	2.0	-	2.5	0.3	1.0
CREPS REV '05 TR ETAL	21-240-007	17	1	-	-	3	1	-	-	2	-	-	0	-	0	14	-	48	-	-	2	2	-	-	7.3	1.0	3.0	9.0	0.3	2.0
CREPS REV '05 TR ETAL	21-240-016	18	1	-	1	4	2	-	-	3	-	-	0	1	0	2	-	-	-	-	1	1	-	-	1.5	1.0	4.0	2.0	0.7	1.0
CREPS REV '05 TR ETAL	21-240-001	19	3	-	2	3	1	-	-	3	-	-	1	1	1	14	-	34	-	-	2	1	-	-	5.5	2.5	3.0	5.8	1.0	1.5
CREPS REV '05 TR ETAL	21-240-001	20	1	-	2	3	1	-	-	3	-	-	0	2	0	17	-	4	-	-	1	2	-	-	3.0	1.5	3.0	6.5	0.3	1.5
CREPS REV '05 TR ETAL	21-240-007	21	1	-	2	2	0	-	-	3	-	-	1	1	0	16	-	4	-	-	1	1	-	-	2.7	1.5	2.0	6.0	0.3	1.0
CREPS REV '05 TR ETAL	21-240-001	22	1	-	2	3	1	-	-	3	-	-	0	1	0	17	-	3	-	-	1	2	-	-	2.8	1.5	3.0	36.3	0.3	1.0
CREPS REV '05 TR ETAL	21-240-001	23	0	-	1	0	0	-	-	1	-	-	-	0	0	0	-	0	-	0	-	1	-	0	0.3	0.5	0.0	0.4	0.0	0.5
CREPS REV '05 TR ETAL	21-240-007	81	0	-	-	2	1	-	-	2	-	-	0	-	0	12	-	-	-	-	1	1	-	-	2.1	0.0	2.0	5.0	0.3	1.0
CREPS REV '05 TR ETAL	21-240-007	82	1	-	2	2	1	20	-	3	-	-	1	1	0	6	-	3	-	-	1	1	-	-	3.2	1.5	2.0	3.3	5.3	1.0

Project predicted to extend the last day wet beyond 4/28 and result in following (per Figure 9, Appendix C, TUFLOW Model Results and CEQA Impact Analysis).

Figure 3: Waterfowl Season Summary, by WY Type (WYs 1997-2018)

Majority Owner (by Area)	APN	Parcel ID	Field ID	Avg. Wet Day Inundated Area (%), Existing Conditions					Avg. Wet Day Depth (ft), Existing Conditions					Avg. Change in Depth (Project – Existing) During Wet Days (ft)					Avg. No. of Additional Wet Days					Avg. Reduction in Dry Days (%)				
				Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical
CREPS REV '05 TR ETAL	21-240-016	101	426	87.91	82.65	79.69	73.35	73.75	5.09	2.67	2.11	1.83	1.74	0.03	0.16	0.14	0.06	-0.08	1.7	0.3	0.0	0.4	4.0	1.96	0.28	0.00	0.53	3.47
CREPS REV '05 TR ETAL	21-240-025	103	11	92.43	79.70	78.37	80.10	78.23	5.22	2.31	1.85	2.28	1.73	-0.22	0.07	0.08	-0.11	0.07	3.2	1.7	0.6	1.4	1.0	3.38	1.51	0.52	1.26	0.80
CREPS REV '05 TR ETAL	21-240-028	104	19	87.47	80.48	79.21	71.95	71.99	4.81	2.17	1.70	1.63	1.33	0.07	0.13	0.08	0.09	0.04	0.8	0.0	0.6	0.0	1.0	0.86	0.00	0.65	0.00	0.95
CREPS REV '05 TR ETAL	21-240-029	105	91	91.01	84.45	80.98	77.45	75.44	5.69	2.88	2.31	2.45	1.97	-0.11	0.05	0.03	0.06	0.08	3.2	1.7	1.2	0.4	0.7	3.35	1.78	1.12	0.40	0.56
CREPS REV '05 TR ETAL	21-240-030	106	8	93.08	85.97	84.00	79.60	79.48	5.31	2.36	1.85	2.10	1.62	-0.17	0.08	0.05	0.00	0.09	3.0	1.3	0.8	0.8	0.3	3.18	1.25	0.72	0.74	0.28
CREPS REV '05 TR ETAL	21-240-031	107	57	89.74	85.33	81.25	79.64	79.02	5.31	2.64	2.08	2.22	1.87	-0.01	0.08	0.06	0.02	0.05	2.5	1.3	1.0	0.8	1.0	2.58	1.44	1.01	0.82	0.88
CREPS REV '05 TR ETAL	21-240-032	108	5	99.19	97.33	95.65	96.96	94.85	5.19	2.51	1.90	1.85	1.40	0.09	0.15	0.11	0.08	0.07	0.8	0.0	0.4	0.2	0.3	0.89	0.00	0.51	0.26	0.35
CREPS REV '05 TR ETAL	21-240-033	109	13	93.37	89.22	86.45	85.14	80.02	5.42	2.80	2.26	2.19	1.75	0.10	0.14	0.12	0.07	0.06	0.7	0.0	0.4	0.4	0.3	0.72	0.00	0.49	0.48	0.33
CREPS REV '05 TR ETAL	21-240-001	120	150	89.76	88.15	84.72	79.07	73.96	5.50	3.19	2.56	2.12	1.80	0.13	0.20	0.19	0.09	0.09	1.0	0.0	0.0	0.2	0.3	1.24	0.00	0.00	0.29	0.37
CREPS REV '05 TR ETAL	21-240-007	123	237	89.63	89.42	87.31	81.57	72.15	5.43	3.31	2.71	2.16	1.79	0.09	0.20	0.16	0.11	0.13	1.3	0.0	0.2	0.0	0.0	1.75	0.00	0.18	0.00	0.00

Figure 4: Waterfowl Season Summary, by WY Type (WYs 1997-2018)

Majority Owner (by Area)	APN	Parcel ID	Field ID	Avg. Dry Day Inundated Area (%), Existing Conditions					Avg. Dry Day Depth (ft), Existing Conditions					Avg. Change in Depth (Project – Existing) During Dry Days (ft)					Avg. Dry Day Inundated Area (%), Project Conditions				
				Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical
CREPS REV '05 TR ETAL	21-240-016	101	426	1.03	0.60	0.34	0.57	1.54	0.36	0.21	0.19	0.18	0.22	-0.05	-0.05	0.08	0.00	0.01	1.19	0.55	0.39	0.52	1.42
CREPS REV '05 TR ETAL	21-240-025	103	11	1.96	1.87	1.06	1.38	1.71	0.33	0.38	0.25	0.16	0.22	-0.02	-0.09	-0.01	0.00	0.00	1.65	1.64	1.03	1.21	1.67
CREPS REV '05 TR ETAL	21-240-028	104	19	0.35	0.22	0.31	0.19	0.82	0.10	0.10	0.11	0.10	0.10	0.00	0.00	-0.01	0.00	0.00	0.31	0.22	0.26	0.25	0.67
CREPS REV '05 TR ETAL	21-240-029	105	91	2.18	2.35	1.37	1.60	2.31	0.66	0.38	0.70	0.39	0.56	0.01	-0.01	-0.02	0.00	-0.02	1.61	2.05	1.21	1.57	2.25
CREPS REV '05 TR ETAL	21-240-030	106	8	2.23	2.17	1.41	1.49	2.24	0.35	0.39	0.25	0.20	0.24	-0.03	-0.07	-0.01	0.00	0.01	1.88	1.99	1.33	1.41	2.28
CREPS REV '05 TR ETAL	21-240-031	107	57	1.59	1.91	1.06	1.40	1.83	0.69	0.24	0.82	0.40	1.04	0.01	-0.03	-0.02	0.00	-0.02	1.18	1.73	0.90	1.32	1.70
CREPS REV '05 TR ETAL	21-240-032	108	5	0.31	0.10	0.08	0.18	0.15	0.09	0.07	0.08	0.08	0.10	0.00	0.00	0.00	0.00	0.00	0.30	0.10	0.05	0.18	0.13
CREPS REV '05 TR ETAL	21-240-033	109	13	0.39	0.29	0.30	0.31	0.56	1.21	0.10	1.20	1.05	1.14	0.00	0.00	-0.18	0.04	0.01	0.43	0.29	0.28	0.26	0.54
CREPS REV '05 TR ETAL	21-240-001	120	150	1.50	0.52	0.64	0.50	1.06	0.44	0.36	0.64	0.274	0.31	-0.02	0.00	0.01	0.03	-0.01	1.58	0.55	0.73	0.52	1.07
CREPS REV '05 TR ETAL	21-240-007	123	237	0.70	0.35	0.35	0.30	0.84	0.12	0.10	0.10	0.11	0.11	0.09	0.01	0.15	0.00	0.05	1.42	0.36	0.46	0.31	0.97

Figure 5: Waterfowl Season Summary (WYs 1997-2018)

Majority Owner (by Area)	APN	Parcel ID	Field ID	Change in Number of Wet Days (days)																					Avg. Change in No. of Wet Days (days)
				1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
CREPS REV '05 TR ETAL	21-240-031	101	426	0	0	3	1	0	1	0	0	0	0	0	11	0	0	4	0	1	0	1	0	3	0	1.1
CREPS REV '05 TR ETAL	21-240-031	103	11	4	0	4	1	0	5	1	1	3	4	0	3	0	1	2	0	2	0	0	1	5	0	1.7
CREPS REV '05 TR ETAL	21-240-029	104	19	0	0	1	0	0	0	0	2	0	1	0	3	0	0	3	0	0	0	0	1	0	0	0.5
CREPS REV '05 TR ETAL	21-240-029	105	91	2	0	9	0	0	2	3	4	2	0	0	2	0	0	2	0	0	0	0	2	6	0	1.5
CREPS REV '05 TR ETAL	21-240-016	106	8	2	0	4	1	0	2	1	2	2	4	0	1	0	1	3	0	2	0	0	1	5	0	1.4
CREPS REV '05 TR ETAL	21-240-016	107	57	0	0	9	0	0	3	2	4	2	1	0	2	0	0	3	0	1	0	1	1	2	0	1.4
CREPS REV '05 TR ETAL	21-240-028	108	5	0	0	1	0	0	1	0	2	0	1	0	0	0	0	3	0	0	0	1	0	0	0	0.4
CREPS REV '05 TR ETAL	21-240-016	109	13	0	0	1	0	0	1	0	2	0	1	0	0	0	0	2	0	1	0	1	0	0	0	0.4
CREPS REV '05 TR ETAL	21-240-016	120	150	0	0	3	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0.4
CREPS REV '05 TR ETAL	21-240-016	123	237	0	1	4	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0.4

Comment Letter I5

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February 1, 2020

Via Electronic Mail Only

Director Karla Nemeth
California Department of Water Resources
1416 Ninth Street
P.O. Box 942836
Sacramento, CA 94236-0001
Karla.nemeth@water.ca.gov

California Department of Water Resources
Division of Flood Management
Attn: Stephanie Ponce, Environmental Scientist
3310 El Camino Avenue, Room 140
Sacramento, CA 95821
TisdaleWeirRehabProject@water.ca.gov

Re: Comments on Tisdale Weir Rehabilitation and Fish Passage Project Draft Environmental Impact Report (State Clearinghouse No. 2109049093) and Request for CEQA Notice

Dear Director Nemeth and Ms. Ponce:

The following comments on the draft environmental impact report (DEIR) for the Department of Water Resources' (DWR) proposed Tisdale Weir Rehabilitation and Fish Passage Project (Project) are submitted on behalf of A & G Montna Properties LP (Montnas), which owns and operates the Willow Slough Duck Club (Duck Club) in the Sutter Bypass. The Montnas have significant concerns about the Project's potential impacts on the access to and operation of the Duck Club. The DEIR provides only general information regarding Project effects in the Sutter Bypass and does not provide sufficient information for the Montnas to understand how the Duck Club may be affected.

The Duck Club is a 495-acre conservation property (Property) maintained for waterfowl and upland species conservation according to the terms of an easement held by the United States Fish and Wildlife Service. The Property is located west of Nicolaus in the Sutter Bypass near Nelson Slough, just upstream of the confluence with the Feather River. (See Exhibit A.) In support of the conservation purposes, the Property was retired from rice production in 2007 and restored as habitat; it is no longer farmed. The only source of revenue to sustain the Property for conservation purposes is duck hunting. The Property does not have any floating duck blinds; all hunting infrastructure is fixed and has been developed based on existing conditions in the Sutter Bypass, including existing operational patterns of the Tisdale Weir. Flooding of the Property can prevent duck hunting if water levels are too deep. Conditions on the west side of the Property can become dangerous due to increased flows.

I. The DEIR Does Not Provide Sufficient Information on Impacts to Sutter Bypass Duck Clubs

Operation of the proposed notch in the Tisdale Weir is likely to change the frequency, duration, and extent of flows through the Sutter Bypass, and raise water elevations. Changes in water levels can alter the habitat suitability for migratory waterfowl that utilize the Sutter Bypass, as different species of waterfowl prefer different water levels and water depth influences which species will utilize a particular area. For duck clubs, the ideal water depth is typically 18 inches, and the Montnas strive to maintain water at this level during waterfowl season. Increases in water levels may adversely impact waterfowl hunting opportunities on the Property, which will impact private hunting clubs economically and may disincentivize continued management of shallow-flooded wetlands. If Project-related increases in water levels impair the ability to maintain appropriate water levels for waterfowl, impacts will be adverse and potentially significant.

Increased flows in the Sutter Bypass also may increase hazards associated with use of the Property for duck hunting, and may make it impossible to safely access the Property for hunting and/or inundate fixed infrastructure such that hunting is not possible at additional times during the year. Increased impacts to duck hunting that reduce access and revenue will compromise the success of the conservation easement and ongoing habitat maintenance, as well as reduce recreational opportunities. So that they can understand the extent of potential Project impacts to the Duck Club and Property, the Montnas request that DWR provide them with information on the specific Project-related flow and water level changes, by water year type, in the Sutter Bypass, including water level changes during the waterfowl season, for the Property. This information should include: (1) the change in the amount of flow in the Sutter Bypass downstream of the Tisdale Weir (in cubic feet per second), including flow at the Duck Club; (2) the change in frequency of flooding; (3) the change in depth of flooding; and (4) the change in duration of inundation.

More detailed comments reflecting these concerns are being submitted to DWR by the Sutter Bypass-Butte Slough Water Users' Association (Association), and the Montnas incorporate those comments by reference. In particular, the Montnas concur with the Association's comments that any increase in adverse effects to the Duck Club and Property would exceed the scope of existing flood easements and would require landowner compensation. Failure to adequately resolve these issues will compromise future cooperative efforts regarding use of the Bypass between DWR and Sutter Bypass stakeholders, including the Montnas.

II. Use of Project Facilities for Floodplain Habitat Creation Will Require the Consent of Bypass Property Owners; Addressing Landowner Concerns Will be Essential to Securing Such Consent

The Montnas understand that the Project represents the first phase in DWR's Tisdale Weir and Sutter Bypass Program, which includes the Project and, for phase two, the proposed Sutter and Tisdale Bypasses Flood & Multi-Benefit Strategy and Management Plan, under which DWR and/or other public agency partners may modify the existing channels, floodplain, and vegetation in the Sutter and Tisdale Bypasses to improve floodplain habitat. Phase two could include significantly expanded flooding of the Sutter Bypass, with flooding occurring over a much longer period than historical operation of the weir. Use of the Sutter Bypass for habitat creation would exceed the scope of the existing easement and require consent of the landowners and adequate compensation. Securing the trust of landowners and other stakeholders will be essential to carrying out the Program. To that end, DWR must ensure that landowner concerns with the Project are adequately addressed in the CEQA process.

III. Conclusion

The DEIR fails to meet CEQA's informational standards with respect to impacts to Sutter Bypass duck clubs and conservation properties. There is insufficient information in the DEIR to demonstrate to the Montnas that Project impacts to recreation, including to the Duck Club, will be less than significant, or that Project impacts will not increase the burden of the existing flood easement.

The DEIR must be revised, using appropriate methods and substantial evidence and analysis, so that landowners, local officials, and the public can understand the full scope and severity of potential Project impacts. These modifications, and a good faith effort to disclose relevant information to landowners (including the parcel-specific analyses related to water levels (depth, frequency and duration)) are essential not only to produce a legally adequate EIR but also to establish trust and maintain a cooperative working relationship with Sutter Bypass landowners for the Project and future state-led habitat restoration efforts in the Bypass. Given the limitations of the existing flood easement, landowner support will be necessary for DWR or other agencies to implement planned future fish habitat projects in the Sutter Bypass. If DWR is unable to address landowner concerns with this Project, it will make it very difficult to secure needed cooperation for future projects within the Sutter Bypass.

For the Montnas to continue their constructive engagement in the Project review process, DWR must provide the requested analysis and information, and allow additional opportunity for comment on the DEIR before proceeding to prepare the Final EIR. The Montnas request to be immediately notified when the Final EIR is complete, and where they may review responses to their comments at least ten (10) days before DWR takes any action to certify the Final EIR or approve the Project.

Pursuant to Public Resources Code section 21092.2, the Montnas hereby also request that DWR provide a copy of any Notice of Determination (NOD) filed for the Project, as soon as it is filed. Please mail the NOD to my attention at the address on this letterhead, and also email it to ktaber@somachlaw.com and jon@montnafarms.com. If you have questions about these comments, please do not hesitate to contact Jon Munger at (530) 330-2827 to discuss this letter further.

Sincerely,

Kelley M. Taber
Attorney

Exhibit A
cc: Sutter County Board of Supervisors
1160 Civic Center Blvd.
Yuba City, CA 95993

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Exhibit A

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Letter I5 Response	**Somach Simmons and Dunn for A&G Montnas Properties LP, Kelley M. Taber, Attorney** February 1, 2021

I5, Lines 4-22 The comment describes the Willow Slough Duck Club, which is owned and operated by A&G Montnas Properties LP.

I5, Lines 23-35 The comment states that changes in the frequency, extent, and duration of inundation of parcels in the Sutter Bypass with implementation of the Proposed Project could affect waterfowl hunting. The DEIR addresses potential Project impacts to recreation and waterfowl hunting throughout the entire Sutter Bypass, and in so doing, also evaluates impacts to recreational uses (waterfowl hunting) associated with inundation of the parcels in the Sutter Bypass due to operation of the Proposed Project. For private parcels within the Sutter Bypass, the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for up to three additional days per year during a 138-day duck hunting season; beyond this, there would be no effective change in water levels during time periods when duck hunting typically occurs.

As noted in DEIR Section 3.8.4, *Methods of Analysis* (page 3.8-8), the Sutter Bypass is a floodway that conveys floodwaters and frequently inundates duck hunting sites within the Sutter Bypass (without the Proposed Project) at depths considerably greater than a few feet and closes access roads. When the sites are not inundated by floodwaters, some areas are actively managed (via diversion and pumping) to generate the desired, shallow- flooded habitat (optimal water depth is typically 18 inches, as noted in the comment).

To assess any potential flow-related impacts of the Proposed Project, a comparative assessment of the additional wet days resulting from increased flows from the Proposed Project was used as a proxy for a lack of access/too wet to hunt. The term wet day assumes the given field or parcel is inundated at a depth of at least 0.1 feet over at least 30 percent of its area, and is effectively considered inundated on that day for purposes of the analysis presented in the DEIR. Thus, as a metric, a wet day comprises inundation extent, water depth and duration.

DEIR Impact 3.8-2 (pages 3.8-11 through 3.8-13) and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* discuss the predicted average annual change in the number of wet days compared to existing conditions, by parcel, as a result of the Proposed Project. For the private

waterfowl hunting clubs in the Sutter Bypass on Williamson Act parcels, the predicted increase in the number of wet days, on average, is at most one day per year (i.e., the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for one additional day per year during a 138-day duck hunting season). For all other private parcels within the Sutter Bypass, the predicted increase in the number of wet days during waterfowl season, on average, is at most three days per year (i.e., the Proposed Project, on average, may preclude duck hunting, or at least preclude ideal conditions for duck hunting, for up to three additional days per year during a 138-day duck hunting season) (see Table and Figure 12 in Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* of the DEIR). Beyond this, there would be no effective change in water levels during time periods when duck hunting typically occurs (see Master Comment Response 3).

Additional TUFLOW model output, which underlies the analysis presented in the DEIR, is included as a part of Master Comment Responses 2 and 3 (and Attachments A–F of this FEIR). Information specific to the Montnas parcels is also summarized by water year type and presented separately here as Figures 1 through 3. As shown in Figure 1, during existing wet days, hunting would generally be precluded, e.g., looking at the averages by water year type, approximately at least two-thirds of each Montnas parcel is completely inundated at a depth of well beyond 18 inches. Further, among dry days (which are assumed to be conducive for waterfowl hunting, management of on-site water levels, etc.), there is no real change induced by the Proposed Project (e.g., the parcel remains dry, as indicated by the existing and Project condition inundated areas shown in Figure 2). Changes in water depth are either extremely small (in the case of wet days) or irrelevant (in the case of dry days, as the parcels remain dry). The mode of impact, as described in the DEIR, is when the Proposed Project would result in a dry day changing to a wet day. The impact of the Proposed Project tends to be an "all or nothing" type, i.e., either it results in flooding the parcel or it does not.

For the Montnas parcels, the predicted increase in the number of wet days, on average, is less than one day per year as result of Project implementation during waterfowl hunting season (Figure 3). Considering each year (i.e., not averaging), the majority of the predicted change for the Montnas parcels is zero additional wet days and the maximum number of additional wet days is three. For context, the waterfowl hunting season used in the DEIR analysis spans 138 days (from September 28 through February 12). As concluded in DEIR Impact 3.8-2, given the seasonal and year-to-year variation in inundation within the Sutter Bypass under existing conditions,

this small, predicted change as a result of the Proposed Project would not result in any substantial loss of recreational opportunities with regard to waterfowl hunting, or result in substantial repairs to submerged blinds or roads as stated in the comment.

For additional information on Proposed Project Sutter Bypass flow and potential impacts on recreation, see Master Comment Response 3.

I5, Lines 36-39 The Proposed Project would not make it impossible to safely access the Montnas property for hunting and/or inundate fixed infrastructure such that hunting is not possible at additional times during the year, as stated by the commenters. As noted in Response I5-2 and stated in the DEIR (page 3.8-8): It is important to note that hunting areas are inside the Sutter Bypass, a floodway that conveys floodwaters and frequently inundates these hunting sites at depths considerably greater than a few feet and closes access roads. Further, when the sites are not inundated by floodwaters, some areas are actively managed (via diversion and pumping) to generate the desired, shallow-flooded habitat (optimal water depth is typically 18 inches). For these reasons, under existing conditions, when a parcel in the Sutter Bypass is experiencing inundation from floodwaters (e.g., when the Tisdale Weir is spilling or shortly thereafter), it is assumed that access or management for duck hunting use would already be impeded to some degree. By contrast, it is assumed that most duck hunting would occur during times when a parcel is not being inundated by floodwaters, but rather when the parcel is generally dry save for areas that are being purposefully, shallowly flooded by way of active water diversion and management (e.g., pumping and diverting water from the East Borrow Canal).

In the context of the TUFLOW model and impacts analysis summarized in the DEIR, a wet day represents an inundated condition due to floodwaters for a given parcel. Specifically, as stated in Response I5-2 and the DEIR (see page 29, Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis*): A wet day was determined to be a day during the waterfowl hunting season (September 28 through February 12 [CDFW, 2020]) when the TUFLOW modeling results indicate that water on 30 percent of the parcel or more is at least 0.1 feet deep. In the DEIR analysis, if the Proposed Project would result in a dry day becoming a wet day, the Proposed Project would have an impact for that particular day, e.g., the Proposed Project would result in impediments to duck hunting on that day (again, this is consistent with the commenters' assertion). See also Response I5-2 for information specific to the Montnas parcels.

I5, Lines 39-41 As stated in Response I5-2, operation of the Proposed Project would not result in any substantial loss of recreational opportunities with regard to waterfowl hunting or result in substantial repairs to submerged blinds or roads. For the Montnas parcels, the predicted increase in the number of wet days, on average, is less than one day per year as result of Project implementation during waterfowl hunting season (Figure 3 below). Considering each year (i.e., not averaging), the majority of the predicted change for the Montnas parcels is zero additional wet days and the maximum number of additional wet days is three. For context, the waterfowl hunting season used in the DEIR analysis spans 138 days (from September 28 through February 12).

The portion of the comment stating the Proposed Project could compromise the success of the conservation easement and ongoing habitat maintenance does not constitute or contribute directly or indirectly to an effect on the physical environment. Therefore, this comment does not raise an issue under CEQA. DWR appreciates the commenters' concerns and has ensured that the development of the EIR and analysis of the Proposed Project complies with CEQA, and it will comply with all applicable legal requirements for the implementation of the project. No further response is required.

I5, Lines 41-48 The DEIR does describe the additional volume, frequency, and duration of flow (to the Sutter Bypass) through the notch as a result of the Proposed Project and the TUFLOW model does provide this information. Table 5-4 on page 5-25 in DEIR Chapter 5, *Alternatives*, presents the predicted change in flow volume, frequency, and duration (to the Sutter Bypass) through the notch as a result of the Proposed Project, aggregated by water year type. Additional TUFLOW model output, which underlies the analysis presented in the DEIR, is included as a part of Master Comment Responses 2 and 3 (and Attachments A–F of this FEIR). See also Response I5-2 for information specific to the Montnas parcels.

All of the metrics referenced by the commenter—(1) change in the amount of flow in the Sutter Bypass downstream of the Tisdale Weir, (2) change in frequency of flooding, (3) change in depth of flooding, and (4) change in duration of inundation—were analyzed and included in the determination of impacts described in the DEIR for agricultural resources and recreation. For example, for each day of each year and season within the analysis period (WY 1997–2018), the TUFLOW model was used to calculate the number of wet days for the commenters' parcel(s) for existing and Proposed Project conditions. Implicit in this calculation is the amount of flow, per day, that moves on and off of the commenters' parcel. Further, as described in the

DEIR, a wet day assumes a given parcel is inundated at a depth of at least 0.1 feet over at least 30 percent of its area, and is effectively considered inundated on that day for purposes of the analysis presented in the DEIR. Thus, as a metric, the number of wet days comprises both a frequency and a duration (e.g., for how long was the parcel/field inundated). Further, the extent of inundation is similarly built into the analysis TUFLOW model results, both at the field/ parcel scale and at the scale of the entire Tisdale and Sutter Bypasses (e.g., 30 percent of the individual field/parcel must be inundated to be considered wet, and the calculation is made for all fields/parcels, individually, throughout the Tisdale and Sutter Bypasses). This information was used as the basis for the DEIR finding in Impact 3.8-2 (pages 3.8-11 through 3.2-13) that no existing recreational facilities would be permanently displaced, and access to existing recreational facilities or opportunities would not be substantially permanently decreased as a result of the Proposed Project.

Project effects on agricultural operations and recreation in the Sutter Bypass are further described in Master Comment Responses 2 and 3, respectively.

I5, Lines 49-55 Responses to the Sutter Bypass–Butte Slough Water Users' Association comments can be found in Responses O1-1 through O1-40.

A portion of the comment states that any increase in adverse effects to the duck club and property would exceed the scope of existing flood easements and would require landowner compensation. State CEQA Guidelines Sections 15131(a) through 15131(c) provide guidance on the discussion of economic (and social) effects in an EIR. Specifically, such effects may be included in an EIR but "shall not be treated as significant effects on the environment." However, economic and social effects may be used to determine the significance of physical changes caused by a project, but these changes "need not be analyzed in any detail greater than necessary to trace the chain of cause and effect." Any economic impacts from the Proposed Project would not constitute or contribute directly or indirectly to an effect on the physical environment. Because the comment addresses potential economic effects of the Proposed Project, it is not related to the content, analysis, or conclusions in the DEIR and no further response is provided. Please note that if it is determined that there are impacts from the Proposed Project that will require some type of mitigation or compensation outside of the CEQA process, DWR will comply with all applicable legal requirements. As with all comments submitted during the DEIR public review period, this comment will be reviewed and considered by DWR before a decision on the Proposed Project is made.

I5, Lines 56-69 DWR appreciates the commenters' concerns and has ensured that the development of the EIR and analysis of the Proposed Project complies with CEQA. No further response is required.

I5, Lines 70-75 The DEIR provides adequate information to evaluate impacts to agricultural uses and recreational uses (waterfowl hunting) associated with inundation of the fields in the Sutter Bypass due to operation of the Proposed Project. Information concerning the impact analysis for agricultural resources and recreation is presented in the DEIR (Section 3.2, *Agricultural Resources;* Section 3.8, Recreation; and Appendix C, *TUFLOW Model Results and CEQA Impacts Analysis,* including Table 1 and Figures 9 through 12).

As described in Response I5-2, for the Montnas parcels, the predicted increase in the number of wet days, on average, is less than one day per year as result of Project implementation during waterfowl hunting season (Figure 3). As concluded in DEIR Impact 3.8-2, given the seasonal and year-to-year variation in inundation within the Sutter Bypass under existing conditions, this small, predicted change as a result of the Proposed Project would not result in any substantial loss of recreational opportunities with regard to waterfowl hunting, or result in substantial repairs to submerged blinds or roads. Issues concerning existing flood easements and Project compatibility are not the purview of an analysis under CEQA.

For additional information on Proposed Project Sutter Bypass flow and potential impacts on recreation, see Master Comment Response 3.

I5, Lines 76-86 DWR appreciates the commenters' concerns and it will ensure that all legal requirements for implementation of the Proposed Project are met, including, if necessary, appropriate compensation. No further response is required.

I5, Lines 87-92 DWR will notify the Montnas when the FEIR is complete, and where they may review responses to comments.

I5, Lines 93-98 DWR will provide a copy of the Notice of Determination to the commenters. The contact information provided is noted.

3.4 References

CDFW (California Department of Fish and Wildlife). 2020. Waterfowl Regulations Summary for the 2019/2020 Season. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=156667&inline. Accessed October 27, 2020.

Reclamation and DWR (U.S. Bureau of Reclamation and California Department of Water Resources). 2019. Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project EIS/EIR. Final.

Singer, M. B., and R. Aalto, 2009. Floodplain development in an engineered setting. Earth Surf. Process. Landforms 34:291–304.

Singer, M. B., R. Aalto, and L. A. James. 2008. Status of the Lower Sacramento Valley Flood-Control System within the Context of its Natural Geomorphic Setting. Natural Hazards Review, August 2008, pp. 104–115.

Waterfowl Season Summary, by WY Type (WYs 1997-2018)

Majority Owner (by Area)	APN	Parcel ID	Field ID	Avg. Wet Day Inundated Area (%), Existing Conditions					Avg. Wet Day Depth (ft), Existing Conditions					Avg. Change in Depth (Project – Existing) During Wet Days (ft)					Avg. No. of Additional Wet Days					Avg. Reduction in Dry Days (%)				
				Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical
MONTNA A&G PROPERTIES LP	29-210-022	186	461	85.81	71.75	66.57	72.19	67.35	4.78	2.88	2.39	2.92	2.41	-0.02	0.07	-0.09	0.03	0.07	0.5	0.7	1.0	0.2	0.3	0.62	0.58	0.80	0.16	0.25
MONTNA A&G PROPERTIES LP	29-230-014	198	33	83.12	70.48	63.99	70.98	66.57	5.38	3.51	2.97	3.62	2.96	0.03	0.01	0.00	0.01	0.06	0.2	1.0	0.6	0.2	0.3	0.14	0.84	0.48	0.16	0.25

Figure 4: Waterfowl Season Summary, by WY Type (WYs 1997-2018)

Majority Owner (by Area)	APN	Parcel ID	Field ID	Avg. Dry Day Inundated Area (%), Existing Conditions					Avg. Dry Day Depth (ft), Existing Conditions					Avg. Change in Depth (Project – Existing) During Dry Days (ft)					Avg. Dry Day Inundated Area (%), Project Conditions				
				Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical
MONTNA A&G PROPERTIES LP	29-210-022	186	461	0.45	0.48	0.27	0.13	0.29	0.84	0.82	0.44	0.24	0.46	0.08	-0.03	-0.02	0.00	-0.06	0.55	0.76	0.30	0.22	0.52
MONTNA A&G PROPERTIES LP	29-230-014	198	33	1.40	2.55	0.91	0.83	0.94	1.04	1..13	0.60	0.32	0.86	0.23	0.21	0.05	0.05	0.10	1.77	2.81	1.10	0.94	0.94

Majority Owner (by Area)	APN	Parcel ID	Field ID	Change in Number of Wet Days (days)																						Avg. Change in No. of Wet Days (days)
				1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
MONTNA A&G PROPERTIES LP	29-210-022	186	461	3	0	0	1	0	0	1	3	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0.5
MONTNA A&G PROPERTIES LP	29-230-014	198	33	0	0	1	1	0	0	1	2	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0.4

CHAPTER 4
Climate Change and Resiliency

4.1 Introduction

Managing climate change and its impact on California water is one of DWR's core values and objectives. DWR's Climate Change Program implements climate mitigation and adaptation measures to ensure that Californians have an adequate water supply, reliable flood control, and healthy ecosystems, now and in the future (DWR 2021). To mitigate future climate impacts, DWR has developed a Climate Action Plan (CAP). As part of plan implementation, all DWR project-level EIRs should include a Climate Change Resiliency and Adaptation section (DWR 2018).

This chapter of the EIR is organized differently from the resource topic sections in DEIR Chapter 3, in that it does not analyze the environmental effects of the Proposed Project in response to the thresholds of significance presented in Appendix G of the State CEQA Guidelines. Instead, this chapter asks and answers three fundamental questions related to climate change:

1. *Climate Change Mitigation:* Because DWR accounts for greenhouse gas (GHG) emissions through its CAP: Phase 1–Greenhouse Gas Emissions Reduction Plan (GGERP), this question will focus on carbon sequestration. Could the Proposed Project provide any carbon sequestration benefits that are not accounted for in the GHG inventory?

2. *Climate Change Adaptation:* Are any climate change adaptation strategies built into the Proposed Project? Will the benefits of the Proposed Project be maintained under future climate change projections?

3. *Climate Change Resiliency:* How could the Proposed Project increase the resiliency of the study area to the effects of climate change? Could the Proposed Project strengthen the study area's ability to rebound from climate change impacts?

4.2 Defining Climate Change Mitigation, Adaptation, and Resiliency

Climate change mitigation can be summarized as reducing climate change. It involves reducing the flow of heat trapping GHGs into the atmosphere, either by reducing the sources of these gases or by enhancing carbon sequestration (NASA 2021). The goal of mitigation is to avoid significant

impacts from climate change. Mitigating climate change in the water sector could include actions such as increasing energy efficiency, conserving water, and restoring the ecosystem.

Climate change adaptation and *resiliency* can be more difficult to define and have been used interchangeably at times. Climate change adaptation involves adjusting to the harmful effects of climate change by reducing vulnerabilities. Adapting to climate change may also involve taking advantage of any potential benefits from climate change, such as a longer growing season (NASA 2021). Climate change resilience is similar to climate change adaptation in that its aim is to emerge stronger when faced with climate change impacts, but resilience differs in its focus on rebounding or the ability to bounce back after being affected by climate change stressors. Resiliency planning can also have a larger, more socio-dynamic or systems-based approach affecting society at large (Wong-Parodi and Fischhoff 2015).

This chapter also evaluates the following alternatives relative to the three questions asked above:

- No Project Alternative
- South Notch Alternative
- North and South Notches Alternative
- North Notch with Modified Gate Operation Alternative
- Tisdale Weir Structural Improvements Alternative

The alternatives analysis qualitatively examines the cumulative balance of GHG emissions by assessing the potential for the project to create a carbon sink (i.e., new vegetation that could sequester carbon and create a net reduction in the project's GHG emissions). A qualitative cumulative assessment is also completed to compare the GHG emissions during the Proposed Project's life span to GHG emissions with the "no project" or project alternatives.

4.3 Impact Analysis

The California State Lands Commission provided comments regarding the GHG emissions analysis in response to the Notice of Preparation (see DEIR Appendix A). Those comments recommended using DWR's CAP to address mitigation, adaptation, and consistency in the climate change analysis for the Proposed Project.

4.3.1 Question 1: Climate Change Mitigation

DWR accounts for greenhouse gas emissions through its CAP: Phase 1–Greenhouse Gas Emissions Reduction Plan in the GHG Emissions section of this DEIR. Please provide a summary of that section below. Could the Proposed Project provide any carbon sequestration benefits that are not accounted for in the GHG inventory?

DEIR Section 3.6, *Greenhouse Gas Emissions,* presents an analysis of GHG emissions associated with the Proposed Project. As discussed in Section 3.6, the Proposed Project would involve construction of improvements to facilitate the rehabilitation and reconstruction of Tisdale Weir and installation of fish passage facilities. The construction activities would result in short-term increases in GHG emissions. Table 4-1 shows levels of GHG emissions associated with Proposed Project construction.

TABLE 4-1: ESTIMATED CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS

Emissions Source	On-Site Concrete Batch Plant Option (metric tons per yearof CO2e)	Concrete Haul- In Option (metric tons peryear of CO2e)
Construction equipment and vehicular emissions over 6½ months	1,434	2,166
Annual emissions amortized over 30 years	47.8	72.2
Annual emissions amortized over the life of the project*	28.7	43.3

NOTES:
CO2e = carbon dioxide equivalent
* Project life is equal to 50 years.
SOURCES: Data provided by DWR in 2019; data compiled by Environmental Science Associates in 2019

Construction activities under the Proposed Project would be subject to DWR's Greenhouse Gas Emissions Reduction Plan, which includes a measure of comprehensive improvements to DWR's construction practices. DWR's GGERP considers projects that would generate 25,000 metric tons (MT) of carbon dioxide equivalent (CO2e) over the entire project construction period, or 12,500 MT of CO2e in any single construction year, to be "extraordinary construction projects." Based on this threshold, the Proposed Project is not considered an extraordinary construction project.

Direct sources of operational GHG emissions from the Proposed Project include vehicle trips by employees and maintenance vehicles, and equipment used for maintenance activities. Because these activities and trips would be comparable to existing activities and trips, they would not cause operational GHG emissions to increase. The Proposed Project is expected to generate a minimal increase in electricity requirements at the site to power the operable gates and monitoring equipment. These emissions would be negligible; therefore, no major source of indirect GHG emissions would result from the Proposed Project.

Tisdale Weir is one of five major overflow weirs in the Sacramento River Flood Control Project. As discussed in DEIR Section 3.4, *Biological Resources,* a number of natural community types and land cover types were observed and would be disturbed by construction activities related to the Proposed Project: annual grassland, riparian forest, seasonal riverine, seasonal wetland, riverine, irrigation ditch, and developed. In contrast with the Proposed Project's construction impacts, rehabilitating and reconstructing Tisdale Weir and installing the fish passage facilities would increase the overall resilience and adaptability of these habitats.

The Proposed Project would operate during and after Tisdale Weir spill events and would increase the average volume of flow to the Tisdale Bypass and areas downstream, which may

seasonally influence vegetation, crops, and any associated carbon sequestration potential. Because the Tisdale and Sutter Bypasses are State Plan of Flood Control facilities, DWR maintains vegetation within the bypasses for purposes of flood conveyance. Further, the vast majority of downstream areas in the Sutter Bypass are actively managed for agricultural production, as hunting clubs, or both. Different agricultural crops and vegetated landscapes may have different potentials for carbon sequestration.

Nevertheless, as described in DEIR Section 3.2, *Agricultural Resources,* the Proposed Project would not result in permanent conversion of agricultural lands, including Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, to nonagricultural use, and would not cause any conflicts with a Williamson Act contract (which includes duck hunting as a use). Therefore, operation of the Proposed Project and alternatives is not expected to have dissimilar potential effects on carbon sequestration as influenced by vegetation.

The structural rehabilitation of Tisdale Weir and improvement of fish passage through the weir to the Sacramento River is not anticipated to result in a substantial increase in GHG emissions that could have a significant impact on the environment. Furthermore, as discussed in DEIR Section 3.6, *Greenhouse Gas Emissions*, the Proposed Project is unlikely to create significant impacts on or conflicts with the goals and objectives established by Assembly Bill 32 and subsequent related State laws and regulations, if all potential impacts can be managed and mitigated through procedures and protocols established in the GGERP.

Energy and Greenhouse Gas Emissions Summary: As outlined in DEIR Section 3.6, *Greenhouse Gas Emissions,* and described further above, GHG emissions from the Proposed Project would have a less-than-significant impact on the environment. Climate change is likely to result in increased variability of precipitation and increased potential for flooding, which in turn could increase the energy needed to operate the Proposed Project. This could increase energy use and GHG emissions, but the effect would likely be negligible and would not result in a significant impact. The net effect on energy use and GHG emissions remains speculative and would likely be negligible in terms of GHG or energy impacts.

Project Alternatives and Cumulative Impact Analysis

The following text presents a comparison of impacts between the alternatives and the Proposed Project with regard to GHG emissions potential, carbon sequestration potential, and cumulative impacts (GHG emissions versus sinks). Table 4-2 presents a high-level, qualitative analysis of the impact comparison.

No Project Alternative

This alternative would not involve any construction work, and operations and maintenance activities would be the same as under existing conditions. Unlike the Proposed Project, the No Project Alternative would not include gate operation or a control building that would use energy.

Similar to existing conditions, the No Project Alternative would have negligible energy impacts. The GHG impacts of the No Project Alternative would be less severe than those of the Proposed Project and would be less than significant.

TABLE 4-2: QUALITATIVE PROJECT ALTERNATIVES ANALYSIS

Project Alternatives	Greenhouse Gas Emissions Potential	Carbon Sequestration Potential	Cumulative Impact (Greenhouse Gas Emissions vs. Sinks)
No Project Alternative	Less than Project	Same as Project	Less than Project
South Notch Alternative	More than Project	Same as Project	More than Project
North and South Notches Alternative	More than Project	Same as Project	More than Project
North Notch with Modified Gate Operation Alternative	Same as Project	Same as Project	Same as Project
Tisdale Weir Structural Improvements Alternative	Less than Project	Same as Project	Less than Project

South Notch Alternative

As described in DEIR Chapter 5, Alternatives, GHG emissions from constructing the South Notch Alternative would be higher than those from the Proposed Project; however, such emissions would remain substantially less than the significance threshold of 1,100 MT of CO2e per year, and therefore would not have a significant impact on the environment. In addition, the South Notch Alternative would not conflict with an applicable plan, policy, or regulation adopted for reducing GHGs, nor would this alternative contribute considerably to a cumulative impact related to GHG emissions. This impact would be less than significant.

North and South Notches Alternative

As described in DEIR Chapter 5, *Alternatives*, GHG emissions from constructing the North and South Notches Alternative would be higher than those from the Proposed Project; however, such emissions would remain substantially less than the significance threshold of 1,100 MT of CO2e per year, and therefore would not have a significant impact on the environment. In addition, the North and South Notches Alternative would not conflict with an applicable plan, policy, or regulation adopted for reducing GHGs, nor would this alternative contribute considerably to a cumulative impact related to GHG emissions. This impact would be less than significant.

North Notch with Modified Gate Operation Alternative

As described in DEIR Chapter 5, Alternatives, GHG emissions from constructing the North Notch with Modified Gate Operation Alternative would be similar to those from the Proposed Project; such emissions would remain substantially less than the significance threshold of 1,100 MT of CO2e per year, and therefore would not have a significant impact on the environment. In addition, the North Notch with Modified Gate Operation Alternative would not conflict with an applicable plan, policy, or regulation adopted for reducing GHGs, nor would this alternative contribute considerably to a cumulative impact related to GHG emissions. This impact would be less than significant.

Tisdale Weir Structural Improvements Alternative

As described in DEIR Chapter 5, Alternatives, GHG emissions impacts of the Tisdale Weir Structural Improvements Alternative would be similar to but less severe than those of the Proposed Project, given the reduced scale of this alternative compared to the Proposed Project. The GHG emissions would be lower than those of the Proposed Project and substantially less than the significance threshold of 1,100 MT of CO2e per year, and therefore would not have a significant impact on the environment. In addition, the Tisdale Weir Structural Improvements Alternative would not conflict with an applicable plan, policy, or regulation adopted for reducing GHGs, nor would this alternative contribute considerably to a cumulative impact related to GHG emissions. Table 4.2-2 provides a high-level qualitative analysis of the cumulative carbon impact of the different alternatives. This impact would be less than significant.

4.3.2 Question 2: Climate Change Adaptation

Are any climate change adaptation strategies built into the Proposed Project? Will the benefits of the Proposed Project be maintained under future climate change projections?

Background on Climate Change

Climate is the average weather over many years, measured most often in terms of temperature, precipitation, and wind. Most of California experiences a Mediterranean weather pattern, with cool, wet winters and hot, dry summers. Precipitation occurs mostly in the winter months. Climate is unique to a particular location, changing on time scales ranging from decades to centuries or millennia.

Climate change generally refers to a change in the state of the climate that can be identified by changes in the mean and/or variability of its properties and that persists for an extended period, typically decades or longer (IPCC 2014). A vast amount of scientific research on climate change, at all geographic scales, has been conducted during the last 50 years. The United Nations Environment Program and the World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) in 1988 to provide the world with a clear scientific view of climate change and its potential environmental and socioeconomic consequences.

The IPCC, an organization of more than 800 scientists from around the world, regularly publishes summary documents that analyze and consolidate recent peer-reviewed scientific literature, providing a consensus of the state of the science. Thus, governments, policymakers, and scientists view the IPCC as the leading international body on the science of climate change, and IPCC summaries are considered to be the best available science. IPCC documents address change at the global and super-regional scales. This section references IPCC studies and California-specific studies (e.g., studies by the California Air Resources Board, the California Energy Commission, DWR, the California Natural Resources Agency [CNRA], and the U.S. Bureau of Reclamation).

Baseline temperature and carbon dioxide (CO2) data, obtained using ice cores and geologic records, extend back to previous ice ages thousands of years ago. In the last 10,000 years, the rate of temperature change has typically been incremental, with warming and cooling occurring over the course of thousands of years. During each of the last three decades, however, the earth's surface has been successively warmer than during any preceding decade since 1850 (IPCC 2014).

Climate can change, and has changed in the past, in response to natural drivers. However, the IPCC has reached consensus that human-caused emissions of GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increases in global average surface temperature from 1951 to 2010 resulted from the anthropogenic (human-caused) increase in GHG concentrations and other anthropogenic forces together (IPCC 2014). The major causes of this rapid loading of GHGs into the atmosphere include the burning of fossil fuels since the beginning of the Industrial Revolution, agricultural practices, increases in livestock grazing, and deforestation. More background information on GHG emissions is provided in Section 3.6, Greenhouse Gas Emissions.

Higher global surface temperatures alter the earth's climate system, with effects that include jet stream changes; El Niño and La Niña climate patterns; the Indian monsoon season; changes to ocean temperature and acidity; reduction of the extent of alpine glaciers, sea ice, and polar ice sheets; effects on atmospheric water content; and changes to the extent and health of boreal and tropical forests (IPCC 2013). Some of these changes will result in specific impacts at the state and local levels.

Global Climate Trends and Associated Effects

Recent Trends

Scientific measurements have shown that changes in global climate are already occurring, including rising air and ocean temperatures, increased ocean salinity, rising global sea levels, changes in precipitation patterns, and increased intensity and frequency of extreme events such as storms, droughts, and wildfires (IPCC 2014). Global mean surface temperature has increased since the late 19th century. In each of the past three decades, the earth's surface has been successively warmer than during any of the previous decades in the instrumental record, and the decade of the 2000s has been the warmest. Global surface temperatures for 2016 were the warmest since recordkeeping began in 1880, with most of the warming occurring in the past 35 years; 16 of the 17 warmest years on record have occurred since 2001 (NASA 2017).

Much of the Western United States experienced warming during the 20th century (approximately 2 degrees Fahrenheit [°F]) and has been projected to experience further warming during the 21st century, with estimates ranging from roughly 5°F to 7°F, depending on location. Projected changes in precipitation are more uncertain. Although projected changes in average total annual precipitation are generally small in many areas, both wet and dry extremes (heavy-precipitation

events and length of dry spells) are expected to increase substantially throughout the western United States.

Based on median projected changes in temperature and precipitation, characterized across the western United States, warming is expected to result in more rainfall-runoff than snowpack accumulation during the cool season. Thus, increases in December–March runoff and decreases in April–July runoff are anticipated. Changes in the frequency and intensity of extreme events have implications for the management of floods, other high flows, and water storage. Evidence also suggests that some areas can expect more year-to-year variability of surface water supplies (Reclamation 2016).

In 2015, snowpack declined to a low of 5 percent of average, one-fifth the previous low, while in the winter of 2016–2017, total snowpack exceeded historic record amounts in some locations. Hydrology-based future climate projections suggest that warming and associated loss of snowpack will persist over much of the western United States. However, there are geographic variations. Snowpack losses are projected to be greatest where the baseline climate is closer to freezing thresholds (e.g., in lower-lying valley areas and lower altitude mountain ranges). In high-altitude and high-latitude areas (e.g., the Columbia River headwaters in Canada and the Colorado River headwaters in Wyoming), there appears to be a chance that cool-season snowpack could increase during the 21st century. Precipitation increases are projected in these locations and appear to offset the snow reduction from warming (Reclamation 2011).

Sea level rise was observed in the 20th century, and the IPCC projects that global mean sea level rise will continue during the 21st century, very likely at a faster rate than observed from 1971 to 2010. Observed trends in sea level rise can be attributed to both thermal expansion of the world's oceans (the expansion of ocean water due to increased water temperature) and the melting of ice sheets (polar and alpine). Since 1993, thermal expansion of the oceans has contributed about 57 percent of the sum of the estimated individual contributions to sea level rise; the decrease in glaciers and ice caps has contributed about 28 percent; and losses from the polar ice sheets have contributed the remainder (IPCC 2007). Between 1900 and 2007 (unless otherwise noted), measurements also show the following changes:

- Decline in the extent of mountain glaciers and global snow cover
- Increase in atmospheric water vapor content
- Loss in mass of the polar ice sheets
- Decrease in the extent of Arctic sea ice
- Increase in precipitation in the eastern portions of North and South America, northern Europe, and northern and central Asia
- Drying conditions in the Sahel region of the Sahara Desert in Africa, the Mediterranean, and southern Africa

- Increase in the frequency of extreme-precipitation events over land areas
- Higher average nighttime temperatures
- Increase in tropical cyclone activity in the North Atlantic
- Increase in ocean temperature (since the 1960s)
- Strengthening in mid-latitude westerly winds (since the 1960s)
- More intense and longer drought conditions in the tropics and subtropics (since the 1970s)
- Decreased frost days and increased frequency and duration of extreme-heat events (since the 1950s)

Changes in these conditions alter the likelihood of occurrence and/or strength of extreme-weather and/or climate events, such as sea level rise coupled with high tides and extreme storm surges. These changes, in turn, are resulting in changes to California's climate, as the regional climate is moderated by sea surface temperature, westerly jet stream wind patterns, the El Niño Southern Oscillation,[6] and Pacific storm patterns (IPCC 2013).

Future Projections

To evaluate climate change influences in 2100 as part of the IPCC Fifth Assessment Report, the IPCC developed future emission scenarios that differ based on varying combinations of economic, technological, demographic, policy, and institutional futures. The IPCC developed and used four emissions scenarios—or Representative Concentration Pathways (RCPs)—to represent a broad range of climate outcomes and develop projections of sea level rise. The RCPs document projected future emissions, concentrations, and land-cover change projections (IPCC 2014).

The four RCPs are RCP 2.6, RCP 4.5, RCP 6.0, and RCP 8.5 (Integrated Assessment Modeling Consortium 2009):

- **RCP 2.6 emissions scenario:** A scenario that assumes very low GHG concentration levels, and in which GHG emissions (and indirectly emissions of air pollutants) are reduced substantially over time.

[6] The El Niño Southern Oscillation is a warming of the ocean surface, or above-average sea surface temperatures, in the central and eastern tropical Pacific Ocean. Rainfall tends to become reduced over Indonesia but increases over the tropical Pacific Ocean. The low-level surface winds, which normally blow from east to west along the equator ("easterly winds"), instead weaken or, in some cases, start blowing the other direction (from west to east or "westerly winds") (L'Heureux 2014).

- **RCP 4.5 emissions scenario:** A stabilization scenario where the total change in energy in the atmosphere attributable to GHG emissions is stabilized before 2100 by implementing a range of technologies and strategies for reducing GHG emissions.

- **RCP 6.0 emissions scenario:** A stabilization scenario where the total change in energy in the atmosphere attributable to GHG emissions is stabilized after 2100, and that assumes the implementation of a range of technologies and strategies for reducing GHG emissions.

- **RCP 8.5 emissions scenario:** A scenario characterized by increasing GHG emissions over time, leading to high GHG concentration levels.

Based on several emissions scenarios, the IPCC projects an average increase in global surface temperatures of 1.8°F to 6.7°F (1.0 to 3.7 degrees Celsius [°C]) by the end of the 21st century (2081 through 2100), compared to the period from 1986 through 2005. When accounting for uncertainty, the IPCC projects a range of potentially 0.3°C to 4.8°C or 0.54°F to 8.6°F. Approximately half of the projected warming is the result of past GHG emissions and will occur even if GHG emissions do not increase past 2000 levels. Some regions of the globe, particularly those at high latitudes, will experience much larger changes relative to existing conditions. Corresponding global average levels of sea level rise are estimated to be between 15.7 and 24.4 inches (0.40 and 0.62 meters), with a range of 10.3 to 32.3 inches (0.26 to 0.82 meters). It is very likely that by the end of the 21st century, sea level will rise in more than 95 percent of the ocean area worldwide. About 70 percent of the world's coastlines are projected to experience a sea level change within ±20 percent of the global average (IPCC 2014).

The following additional changes to the global climate system are projected (IPCC 2014):

- Increased ocean acidity caused by increased CO2 uptake by the oceans

- Reduced global snow cover

- Increased thaw depth in permafrost regions

- Decreased sea ice, with the potential for full disappearance in the summer months

- Increased frequency of heat waves, droughts, and heavy-precipitation events

- Increased intensity of tropical cyclone events

- Northward movement of extra-tropical storm tracks

- Increased precipitation at high latitudes and decreased precipitation in tropical and subtropical regions

- Increased melting of the ice sheets

California Climate Trends and Associated Effects

Recent Trends

Scientific evidence indicates that California's climate is already changing in a manner consistent with global climate change. The state's average temperature has increased since 1920. However, climate change impacts, including temperature increases, are not geographically uniform across California (Moser et al. 2009).

During the last century, sea level along the California coast rose approximately 7 inches (18 centimeters), with higher rates of increase occurring since 1993 (Cayan et al. 2009).

Rising temperature has already begun to reduce the total snowpack, with melting occurring earlier in the year, further shifting stream- and river-flow regimes throughout the Sierra Nevada (Stewart et al. 2005; VanRheenen et al. 2004). In recent decades, there has been a trend toward more rain than snow in the total volume of precipitation (DWR 2015). The average early-spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage (1 acre-foot of water is enough for up to two families' domestic use for one year).

Warmer temperatures combined with long dry seasons over the last few decades have resulted in more severe wildfires (CEC and CNRA 2012). Changing precipitation and water availability may also make forests more susceptible to pests and disease (CNRA 2014).

Plants and animals around the globe are already responding to changes caused by increasing temperatures. In California, species are also reacting to extreme conditions, including heat waves (and increased fire frequency), cold snaps, droughts (and the saltwater intrusion they often cause), floods, and coastal upwelling. Observed changes also include altered timing of animals' and plants' life cycles (phenology); disruption of biotic interactions; changes in physiological performance and species' ranges and abundance; increase in invasive species; altered migration patterns of fishes, aquatic-breeding amphibians, birds, and mammals; changes in forage base; local extinction of plant and animal populations; and changes in habitat, vegetation structure, and plant and animal communities (CDFG 2010).

Future Trends and Projections to 2050 and 2100

Downscaling of global climate simulation model data suggests that average temperatures in California are projected to increase 2.7°F above 2000 averages by 2050 and, depending on GHG emissions levels, 4.1°F to 8.6°F by 2100. Warming will not be uniform temporally or geographically across the state. Summer temperatures will rise more than winter temperatures, and the increases will be greater in the interior regions of California than along the coast. Heat waves will be more frequent, hotter, and longer and there will be fewer extremely cold nights (CEC and CNRA 2012). Increases in temperatures and in the frequency and duration of heat waves are expected to increase energy demand. Increased energy demand would require additional generation resources or the purchase of peak power from external sources.

Model projections for precipitation in California continue to show the Mediterranean pattern of wet winters and dry summers with seasonal, year-to-year, and decade-to-decade variability. Recently, however, several climate models have shown a shift toward drier average conditions by the mid to late 21st century in Central California and, most notably, in Southern California. (Notwithstanding season-to-season variability, this scenario is similar to the conditions experienced in California between the five-year drought and the winter of 2017.)

By the late 21st century, all projections show drying, and half of them suggest that 30-year-average precipitation will decline by more than 10 percent below the historical average. This drying trend is caused by a decline in the frequency of rain and snowfall. Even where projections show relatively small or no declines in precipitation, the central and southern regions of the state (the Central Valley and southern Sierra Nevada) can be expected to be drier from predicted warming alone: the spring snowpack will melt sooner, and the moisture in soils will evaporate during the long dry summer months (CEC and CNRA 2012). Cayan et al. (2012) estimate that California, particularly Southern California, will have 16 to 23 percent less precipitation by 2100.

The hydrologic conditions within the study area are influenced by snowpack storage throughout the Sierra Nevada, Klamath Mountains, and Cascade Range. Snowpack storage in the Sierra Nevada is expected to diminish by 25 to 40 percent from its historical average by 2050 (DWR 2010) and by as much as 70 percent by 2100 (duVair 2003). The average annual Sierra snowpack, which is approximately equal to half the storage capacity of all the state's reservoirs combined, holds water until the melt in late spring and early summer. As noted previously, warming temperatures are expected to result in more rainfall-runoff than snowpack accumulation during the cool season, leading to increases in December–March runoff and decreases in April–July runoff. As the runoff comes earlier, spring and summer streamflow is projected to decline by 10 to 25 percent by 2050, and potentially by as much as 40 to 55 percent by the end of the century (duVair 2003).

In the Klamath Mountains, annual precipitation is projected to decline by approximately an inch by 2050 and 2 inches by 2100 (CalEMA and CNRA 2012). In the higher elevation, mountainous portions of this region, March snow levels could drop to almost zero by the 2090s, a decrease of 2 to 10 inches from 2010 levels. In areas with more snow, 3 to 5 inches of reduction are projected to occur by 2050. In areas with little snow currently (less than 3 inches per year), the snowpack is projected to be near zero by 2050 (CalEMA and CNRA 2012). Warmer temperatures throughout the Cascade Range are projected to result in earlier snowmelt, and March snowpack is projected to disappear by 2090 in most of the area, except higher elevation areas near Mount Shasta (DWR 2008; CalEMA and CNRA 2012).

A shift to more precipitation falling as rain rather than snow will lead to increased wet-season flows in rivers and streams after storms, increasing the potential for floods and erosion. Water that would normally be held as snow and ice until spring or early summer could flow into the

Sacramento and San Joaquin Valleys concurrently with winter storm events (CalEMA and CNRA 2012). Changes in the timing or amounts of rainfall and snowfall may lead to changes in water supply and increase the severity and frequency of flooding risks. Further, although suspended sediment concentrations in the Sacramento River watershed have generally been declining over the past half-century, predictions based on several RCPs (including those described above) show that sediment concentrations, on average, may increase slightly by the end-of-the century (Stern et al. 2020).

Increases in extreme-precipitation events could also result from warmer sea surface and air temperatures, including the phenomenon of "atmospheric rivers," in which warmer winter weather systems could bring more intense, narrow bands of heavy precipitation flowing in a river-like manner from over the Pacific Ocean to parts of the state in a relatively short time period (CEC and CNRA 2012). High-water events in the Sacramento–San Joaquin Delta (Delta) coinciding with high-tide events could result in increased widespread lowland flooding (CNRA 2009).

In California, nearly all major historic flood events have been associated with the presence of atmospheric rivers along the Pacific coast. It is estimated that future changes in the climate will increase the frequency of years with atmospheric river storms, but the number of storms per year is not likely to be affected. More importantly, occasional extreme-precipitation events with intensities greater than historically observed are projected to occur under most warming scenarios. Changes in the frequency and magnitude of atmospheric rivers may result in increases in major flood and storm events (Ralph and Dettinger 2011).

Wildfire risk in California is expected to continue to increase as a result of climate change. Earlier snowmelt, higher temperatures, and longer dry periods over a longer fire season will directly increase wildfire risk. Indirectly, wildfire risk will also be influenced by potential climate-related vegetation changes and ignition caused by lightning.

Human activities will continue to be the biggest factor in ignition risks. The long-term increase in fire occurrence associated with a higher emissions scenario would be substantial; projected increases in the number of larger fires statewide range from 58 to 128 percent above historical levels by 2085. Under the same emissions scenario, the estimated burned area will increase by 57 to 169 percent, depending on location (CEC and CNRA 2012). A model from California's Fourth Climate Change Assessment suggests increases of 77 percent in the mean area and up to 178 percent in the maximum area burned by wildfires by 2050, compared to 1961–1990 (OPR et al. 2018).

Assuming that sea level changes along the California coast reflect global trends, sea levels along the state's coastline will continue to increase through the end of this century and beyond (CEC and CNRA 2012). Sea level rise has the potential to affect the approximately three-quarters of California's population that lives near the state's 1,100 miles of coastline and San Francisco Bay's 500-mile shoreline (CNRA 2014). Sea level rise threatens coastal lands and infrastructure,

increases flooding at the mouths of rivers, places additional stress on Delta levees, and will intensify the difficulty of managing the State's water supply system in the Delta (DWR 2019).

Changes in temperature, precipitation, and sea level rise may have substantial influences on other resource areas. Climate change may have the following consequences on other resources in California (CEC and CNRA 2012):

- Increased average temperatures of air, water, and soil
- Changes in evapotranspiration
- Increased severity of droughts
- Increased frequency and severity of extreme-heat events
- Increased energy demand (particularly during peak summer periods)
- Increased frequency and severity of wildfire events
- Sea level rise (with increased salt water intrusion in the Delta)
- Changes in ocean chemistry (i.e., acidification)
- Shifts in species distribution and ranges
- Decreased number of species
- Increased number of vector-borne diseases and pests (including impacts on agriculture)
- Altered timing of animal and plant life cycles (phenology)
- Disruption of biotic interactions
- Changes in physiological performance, including the reproductive success and survival of plants and animals
- Changes in invasive species
- Altered migration patterns of fishes, aquatic-breeding amphibians, birds, and mammals
- Changes in food (forage) base
- Changes in habitat, vegetation structure, and plant and animal communities

These changes have significant implications for water quality, water supply, flooding, aquatic ecosystems, energy generation, and recreation throughout California. Several guidance

documents have been published to discuss strategies to protect resources from climate change. In 2009, CNRA released its first comprehensive plan for adapting to climate change, entitled *Safeguarding California: Reducing Climate Risk.* This plan is designed to be a roadmap of the ongoing actions and next steps being taken by the State of California to make the state's people, economy, and environment more resilient to the impacts of climate change. The most recent update was published in January 2018.

Effects of Climate Change on the Proposed Project

In 2015, the California Supreme Court held that CEQA does not have to consider the effect of the environment (including climate change) on a project (*California Bldg. Indus. Ass'n v. Bay Area Air Quality Mgmt. Dist.* [2015] 62 C4th 369). Although this discussion does not thoroughly evaluate the impacts of climate change on the Proposed Project, it does discuss how the structural rehabilitation of Tisdale Weir and implementation of fish passage improvements through the weir to the Sacramento River could be affected by climate change.

As outlined under *Future Trends and Projections to 2050 and 2100* in the *California Climate Trends and Associated Effects* section above, expected climate change effects on California that could affect the Extended Planning Area through the end of this century include warming temperatures and more extreme-heat days; sea level rise; drier conditions with more severe droughts; a longer fire season; increased variability in precipitation with more extreme storms; and a smaller snowpack in the Sierra Nevada that melts earlier in the season, and potentially more rapidly. A shift to precipitation falling as rain rather than snow may also lead to increased wet-season flows in rivers and streams after storms, with increased potential for floods and erosion. Water that normally would be held as snow and ice until spring or early summer could flow into the Sacramento and San Joaquin Valleys concurrently with winter storm events. Changes in the timing or amounts of rainfall and snowfall may lead to changes in water supply and increase the severity and frequency of flooding risks.

High-water events in the Delta that coincide with high-tide events exacerbated by sea level rise could also result in increased widespread lowland flooding.

Hydrology and Water Quality Summary: The Proposed Project could be affected by features of climate change that include changes in temperature, precipitation, humidity, and hydrology. Increased temperatures and evapotranspiration would affect water levels or volumes being regulated by the Proposed Project facilities, but not likely at a level that would affect the operation of Tisdale Weir. Climate change will result in increased variability of precipitation on both an annual basis and from season to season. Precipitation and drought events are expected to become more extreme more frequently, which will increase the challenges associated with managing Tisdale Weir. However, as part of the Proposed Project, a concrete or roller-compacted concrete energy dissipation basin would be constructed on the downstream side of the weir. The proposed basin would dissipate hydraulic energy when the Sacramento River spills over. As discussed in DEIR Chapter 2, *Project Description,* the basin would be designed so that when water from the Sacramento River was no longer flowing into the basin, the pool area would

recede (drain) concurrently with the recession of the river and encourage fish to move from the basin to the river (i.e., toward deeper water).

Given the ability of the Proposed Project to accommodate fluctuation of the Sacramento River, the Proposed Project's operations likely would be able to manage a substantial increase or decrease in precipitation. However, greater variability in precipitation could require more frequent operation of the weir during some seasons and less frequent operation during drought periods.

4.3.3 Question 3: Climate Change Resiliency

How could the Proposed Project increase the resiliency of the study area to the effects of climate change? Could the Proposed Project strengthen the study area's ability to rebound from climate change impacts?

Resiliency and Adaptation Analysis

Building Resiliency Through Flood Protection

As described in DEIR Chapter 2, *Project Description,* Tisdale Weir is one of five major overflow weirs in the Sacramento River Flood Control Project. It is generally the first to overflow and the last to stop flowing. The Proposed Project consists of rehabilitation and reconstruction of Tisdale Weir, which was constructed in 1932 and has surpassed its 50-year life expectancy. The proposed improvements to the project site would facilitate weir rehabilitation, reconstruction of fish passage facilities, and enhance the protection of existing project site features. Structurally rehabilitating Tisdale Weir would extend its design life by an additional 50 years.

The Proposed Project is necessary to retain the function of Tisdale Weir. The weir dissipates hydraulic energy when the Sacramento River spills over and would be designed so that when river water was no longer flowing into the basin, the pool area would drain concurrently with the recession of the river. Therefore, the Proposed Project would add resiliency and adaptability to the Sacramento River in response to climate change; the project alternatives would provide the same fundamental changes and improvements with regard to the flood control function of Tisdale Weir, and would therefore also add resiliency and adaptability to the Sacramento River in response to climate change.

Building Resiliency in Fisheries

Certain Chinook salmon population groups are vulnerable to expected environmental shifts with climate change. These shifts include extreme high and low flows and warmer oceans and rivers (NOAA Fisheries 2019). The proposed fish passage facilities are intended to provide passage for all species; however, designs would focus on Chinook salmon (Oncorhynchus tshawytscha) and green sturgeon (Acipenser medirostris). The facilities would be designed to meet fish passage criteria for Chinook salmon and green sturgeon migrating upstream from the Tisdale Bypass to the Sacramento River during and after weir-overtopping (or spill) events. During and after a spill event, for several days to several weeks or longer, the facilities' gate would be operated to

maintain a connection conducive to fish movement between the bypass and the Sacramento River. The rehabilitation of Tisdale Weir would extend the weir's design life, and the installation of a notch and operable gate would provide for improved fish passage and operational flexibility; all of these factors would likely improve the resiliency and adaptability of the Project area to climate change.

Table 4-3 presents a summary of the resiliency and adaptation comparison for the alternatives to the Proposed Project.

TABLE 4-3: PROJECT ALTERNATIVES RESILIENCE AND ADAPTABILITY ANALYSIS

Project Alternatives	Resilience to Climate Change	Adaptability to Climate Change
No Project Alternative	Less Resilient	Less Adaptable
South Notch Alternative	More Resilient	More Adaptable
North and South Notches Alternative	More Resilient	More Adaptable
North Notch with Modified Gate Operation Alternative	More Resilient	More Adaptable
Tisdale Weir Structural Improvements Alternative	More Resilient	More Adaptable

Resiliency Building in Select Sectors

Agricultural Resources: As described in DEIR Section 3.2, *Agricultural Resources,* the Proposed Project would increase the average volume of flow to the Tisdale Bypass, and this may affect farming practices for some agricultural fields downstream. However, as analyzed, these predicted effects would not result in permanent conversion of agricultural lands, including Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, to nonagricultural use, and would not cause conflicts with a Williamson Act contract.

The Proposed Project would operate during and after Tisdale Weir spill events. The timing, magnitude, and duration of weir spill in any given year is influenced by, among other factors, the variation in rainfall, snowfall, and the subsequent runoff. As described herein, future precipitation and runoff trends are expected to shift as a result of climate change, yet the degree to which such changes may occur is unknown and cannot be ascertained with any degree of accuracy at this time, and therefore describing the impacts at this time would be speculative. A future shift to more precipitation falling as rain rather than snow may also shift the distribution of runoff to earlier in the season, which may reduce the likelihood of potential impacts on agricultural resources (identified in DEIR Section 3.2, *Agricultural Resources*) related to weir operations in the late spring and early summer. However, climate change may also subsequently directly affect farming practices (e.g., timing). Based on the information available, the Proposed Project could improve climate resiliency.

Air Quality: As described in DEIR Section 3.3, *Air Quality,* the Proposed Project's impacts on air quality would be less than significant with implementation of mitigation measures that would reduce emissions of criteria pollutants. Mitigation measures include the use of Tier 4F diesel engines, participation in off-site mitigation programs, and implementation of construction

management best management practices designed to reduce particulate matter emissions. Based on the information available, the Proposed Project could improve climate resiliency.

Biological Resources: As described in DEIR Section 3.4, *Biological Resources*, the Proposed Project's impacts on biological resources would be less than significant with implementation of mitigation measures to prevent disturbance, mortality, or loss of habitat for certain listed species, and to prevent loss or degradation of riparian forest, wetlands, and other sensitive habitats. Climate change is expected to have a direct negative impact on existing species and their habitats, but would not exacerbate potential impacts of the Proposed Project. The Proposed Project has the potential to build climate resiliency in the study area. A properly functioning weir can guide flood waters, preventing damage to biological resources.

Cultural Resources: As described in DEIR Section 3.5, *Cultural Resources*, the Proposed Project's impacts on cultural resources would be less than significant with implementation of mitigation measures during project development, construction, or operation. Climate change may have a direct negative impact on existing cultural resources, but would not exacerbate potential impacts of the Proposed Project. The Proposed Project has the potential to build climate resiliency in the study area. A properly functioning weir can guide floodwaters, preventing damage to cultural resources.

4.4 Regulatory Setting

The following text summarizes federal, State, and local laws and regulations pertinent to the evaluation of climate change effects on the Proposed Project.

4.4.1 Federal

On January 20, 2021, President Joe Biden signed the *Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis.* The executive order rescinded the Council on Environmental Quality's 2019 draft guidance on GHGs and climate change regarding the National Environmental Policy Act. Further, the executive order establishes a program for accounting for the benefits of reducing climate pollution, emphasizing that it is essential for agencies to capture the full costs of GHG emissions as accurately as possible, including by taking global damages into account (The White House 2021).

4.4.2 State

The major components of California's climate change initiative are described below. DWR's Climate Action Plan, Phase 1: Greenhouse Gas Emissions Reduction Plan, is summarized in Section 3.6, *Greenhouse Gas Emissions.*

Assembly Bill 1482

Assembly Bill 1482, signed by Governor Edmund G. Brown Jr. on October 8, 2015, required CNRA to update the State's climate adaptation strategy by July 1, 2017, and every three years

thereafter. The bill requires State agencies to maximize specified objectives, such as promoting the use of the climate adaptation strategy to inform planning decisions; to ensure that State investments consider climate change impacts; and to use natural systems and natural infrastructure when developing physical infrastructure to address adaptation.

Executive Order S-13-08

Executive Order S-13-08, signed by Governor Arnold Schwarzenegger on November 14, 2008, required CNRA to develop California's first climate adaptation strategy in coordination with federal, State, regional, and local public and private entities. The executive order instructed the National Academy of Sciences to issue a report on sea level rise to advise California planning efforts; the report was released in June 2012. The order also directed the Governor's Office of Planning and Research (OPR) to provide State land-use planning guidance related to sea level rise and other climate change impacts. The Interim Guidance Document was released in November 2008, with an update released in 2013.

Executive Order B-30-15

On April 20, 2015, Governor Brown signed Executive Order B-30-15 to establish a new California GHG emissions reduction target of 40 percent below 1990 levels by 2030, and to increase statewide efforts to address the need for increased climate change adaptation measures by State agencies. These measures include:

- Incorporating climate change impacts into the State's Five-Year Infrastructure Plan.
- Updating the *Safeguarding California* plan to identify how climate change will affect California infrastructure and industry, and what actions the State can take to reduce the risks posed by climate change.
- Factoring climate change into State agencies' planning and investment decisions.
- Requiring OPR to establish a technical advisory group to help State agencies incorporate climate change impacts into planning and investment decisions.
- Implementing measures under existing agency and departmental authority to reduce GHG emissions.

Executive Order B-55-18

In September 2018, Governor Brown signed Executive Order B-55-18, which established a statewide goal to achieve carbon neutrality as soon as possible and no later than 2045, and to achieve and maintain net negative emissions after that.

Senate Bill 379, Climate Change Adaptation in General Plan Safety Elements

Senate Bill (SB) 379 (Chapter 608, Statutes of 2015), requires all cities and counties to include climate adaptation and resiliency strategies in the safety elements of their general plans. The general plan update must include the following information:

- A climate change vulnerability assessment
- Adaptation and resilience goals, policies, and objectives
- Feasible implementation measures
- Reference to or attachment of a separate adaptation plan, if it fulfills these requirements

Senate Bill 246, Integrated Climate Adaptation and Resiliency Program

SB 246 established the Integrated Climate Adaptation and Resiliency Program, administered by OPR. The program coordinates regional and local adaptation planning efforts with statewide climate adaptation strategies. The legislation also requires the California Governor's Office of Emergency Services to review the Adaptation Planning Guide, in coordination with CNRA, OPR, and relevant public and private entities, and to update the guide as necessary, within one year of an update to the Safeguarding California plan.

2018 Safeguarding California: Reducing Climate Risk

Safeguarding California is California's overall plan for climate adaptation (CNRA 2018). The plan provides policy guidance for State decision-makers, and is part of continuing efforts to reduce impacts and prepare for climate risks. The 2018 plan update identifies ongoing actions and recommendations that protect infrastructure, communities, services, and the natural environment from climate change. It lays out the next steps to achieve the State's goals and determine how those objectives will be achieved and describes overarching strategies recommended by CNRA. The plan also outlines ongoing actions and cost-effective, achievable next steps to make California more resilient to climate change (CNRA 2018).

DWR Climate Action Plan

The CAP is DWR's guide to addressing climate change in the programs, projects, and activities over which it has authority. The CAP is divided into three phases to address mitigation, adaptation, and consistency in the analysis of climate change:

- *Phase I: Greenhouse Gas Emissions Reduction Plan (DWR 2020)*—The plan lays out DWR's GHG emissions reduction goals and strategies for the near term (present to 2030) and long term (2045).

- *Phase II: Climate Change Analysis Guidance*—This phase of planning develops a framework and guidance for consistent incorporation and alignment of analysis for climate change impacts in DWR's project and program planning activities.

- *Phase III: Climate Change Vulnerability Assessment*—This phase describes, evaluates, and quantifies the vulnerabilities of DWR's assets and business to potential climate change impacts. The Phase III Adaptation Plan will help prioritize DWR resiliency efforts such as infrastructure improvements, enhanced maintenance and operation procedures, revised health and safety procedures, and improved habitat management.

4.4.3 Local

Sutter County General Plan

The Sutter County General Plan (2030) (Sutter County 2011) includes goals and policies that are intended to encourage energy conservation, protect air quality, and control GHG emissions. DWR, as a State agency, is not subject to local regulations without legislative consent; however, DWR would implement the Proposed Project in a manner that would not conflict with applicable Sutter County (County) regulations and general plan policies adopted for the purpose of avoiding or mitigating environmental effects.

Sutter County Climate Action Plan

To achieve the Sutter County General Plan's goals and provide a more livable, equitable, and economically vibrant community, the County prepared and has implemented the Sutter County CAP. The CAP was adopted in July 2010 as part of the County's efforts to reduce GHG emissions in coordination with its land use decisions. The Sutter County CAP lists specific actions to reduce GHG emissions attributable to Sutter County to levels consistent with the AB 32 targets. In addition, the CAP serves as a qualified GHG emissions reduction plan from which the county's future development can tier, thereby streamlining environmental analyses under CEQA. The CAP aims to minimize impacts of development on air quality, promote energy conservation, and ensure that the County's land use decisions and internal operations are consistent with adopted State legislation (Sutter County 2010).

4.5 References

CalEMA and CNRA (California Emergency Management Agency and California Natural Resources Agency). 2012a. California Adaptation Planning Guide: Understanding Regional Characteristics. Mather and Sacramento, CA. July 2012. Available: http://resources.ca.gov/ docs/climate/APG_Understanding_Regional_Characteristics.pdf. Accessed January 13, 2021.

Cayan, D., M. Tyree, M. Dettinger, H. Hidalgo, T. Das, E. Maurer, P. Bromirski, N. Graham, and R. Flick. 2009. Climate Change Scenarios and SLR Estimates for the California 2008 Climate Change Scenarios Assessment. Prepared by the California Climate Change Center for the California Energy Commission. CEC-500-2009-014-D. Sacramento, CA.

Cayan, Dan, Tyree, Mary, Pierce, David, and Das, Tapash. 2012. Climate Change and Sea Level Rise Scenarios for California Vulnerability and Adaptation Assessment. July 2012.

CDFG (California Department of Fish and Game). 2010. Climate Change: Confronting the Challenge. Fall 2010. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=31839&inline=true. Accessed January 13, 2021.

CEC and CNRA (California Energy Commission and California Natural Resources Agency). 2012. Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks of Climate Change in California. A Summary Report on the Third Assessment from the California Climate Change Center. Available: https://www.cakex.org/sites/default/files/documents/CEC-500-2012-007.pdf. Accessed January 21, 2021.

CNRA (California Natural Resources Agency). 2009. 2009 California Climate Adaptation Strategy. A Report to the Governor in Response to Executive Order S-13-2008. Available: http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf. Accessed January 13, 2021.

———. 2014. Safeguarding California: Reducing Climate Risk. An Update to the 2009 California Climate Adaptation Strategy. July 2014. Available: https://resources.ca.gov/CNRALegacyFiles/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf. Accessed January 21, 2021.

———. 2018. Safeguarding California Plan: 2018 Update. California's Climate Adaptation Strategy. January 2018. Available: https://resources.ca.gov/CNRALegacyFiles/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf. Accessed January 21, 2021.

duVair, P. 2003. Climate Change and California. Staff report of the California Energy Commission. Last updated 2009.

DWR (California Department of Water Resources). 2008. Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water. October 2008. Available: https://www.scc.ca.gov/webmaster/ftp/pdf/climate_change/water_strategies.pdf. Accessed January 21, 2021.

———. 2010. Climate Change Characterization and Analysis in California Water Resources Planning Studies. Sacramento, CA. December 2010.

———. 2015. California Climate Science and Data for Water Resources Management. June 2015.

———. 2018. Climate Action Plan Phase 2: Climate Change Analysis Guidance. September 2018. Available: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAPII-Climate-Change-Analysis-Guidance.pdf. Accessed March 4, 2021.

———. 2019. California Water Plan Update 2018: Managing Water Resources for Sustainability. Volume 1. Sacramento, CA. June 2019. Available: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2018/Final/California-Water-Plan-Update-2018.pdf. Accessed January 21, 2021.

———. 2020. Climate Action Plan Phase I: Greenhouse Gas Emissions Reduction Plan. Update 2020. Available: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-I-GGERP-Update-2020.pdf. Accessed January 21, 2021

———. 2021. Climate Change Program. Available: https://water.ca.gov/Programs/All-Programs/Climate-Change-Program#:~:text=DWR's%20climate%20change%20program%20implements,now%20and%20in%20the%20future.&text=Partnering%20with%20other%20 efforts%20to,impacts%20that%20are%20already%20occurring. Accessed March 4, 2021.

Integrated Assessment Modeling Consortium. 2009. RCO Database. Available: https://www.iamconsortium.org/resources/database-resources/rcp-database/. Accessed January 21, 2021.

IPCC (Intergovernmental Panel on Climate Change). 2007. Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R. K. Pachauri and A. Reisinger (eds.)]. Geneva, Switzerland.

———. 2013. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T. F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex, and P. M. Midgley (eds.)]. Cambridge, UK, and New York: Cambridge University Press.

———. 2014. Climate Change 2013: Physical Science Basis, Summary for Policy Makers. Working Groups I, II, and III Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. January 2014.

L'Heureux, M. 2014. What is the El Niño-Southern Oscillation (ENSO) in a Nutshell? National Oceanic and Atmospheric Administration. May 5, 2014. Available: https://www.climate.gov/news-features/blogs/enso/what-el-ni%C3%B1o%E2%80%93southern-oscillation-enso-nutshell. Accessed January 13, 2021.

Moser, S., G. Franco, S. Pittiglio, W. Chou, and D. Cayan. 2009. The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California. California Energy Commission, PIER Energy-Related Environmental Research Program. CEC-500-2008-071.

NASA (National Aeronautics and Space Administration). 2017. NASA, NOAA Data Shows 2016 Warmest Year on Record Globally. Release 17-006. January 18, 2017. Available: https://www.nasa.gov/press-release/nasa-noaa-data-show-2016-warmest-year-on-record-globally. Accessed January 13, 2021.

———. 2021. NASA, Global Climate Change Vital Signs of the Planet Solutions—Mitigation and Adaptation. Updated August 3, 2021. Available: https://climate.nasa.gov/solutions/adaptation-mitigation/. Accessed August 3, 2021.

NOAA Fisheries (National Oceanic and Atmospheric Administration Fisheries). 2019. West Coast Salmon Vulnerable to Climate Change, but Some Show Resilience to Shifting Environment. July 25, 2019. Available: https://www.fisheries.noaa.gov/feature-story/west- coast-salmon-vulnerable-climate-change-some-show-resilience-shifting-environment.Accessed January 21, 2021.

OPR et al. (Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency). 2018. California's Changing Climate 2018: A Summary of Key Findings from California's Fourth Climate Change Assessment. Available: https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM- CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf. Accessed January 21, 2020.

Ralph, F. M., and M. D. Dettinger. 2011. Storms, Floods, and the Science of Atmospheric Rivers. Eos 92(32):265–266.

Reclamation (U.S. Bureau of Reclamation). 2011. SECURE Water Act Section 9503(c)—Reclamation Climate Change and Water 2011. Prepared for the United States Congress. April 2011.

———. 2016. SECURE Water Act Section 9503(c)—Reclamation Climate Change and Water 2016. Prepared for the United States Congress. March 2016.

Stern, M. A., L. E. Flint, A. L. Flint, N. Knowles, and S. A. Wright. 2020. The Future of Sediment Transport and Streamflow Under a Changing Climate and the Implications for Long-Term Resilience of the San Francisco Bay-Delta. Water Resources Research, 56, e2019WR026245. Available: https://doi.org/10.1029/2019WR026245. Accessed January 21, 2021.

Stewart, I. T., D. R. Cayan, and M. D. Dettinger. 2005. Changes toward Earlier Streamflow Timing across Western North America. April 15, 2005. Available: https://journals.ametsoc.org/view/journals/clim/18/8/jcli3321.1.xml?tab_body=fulltext-display. Accessed April 2, 2021.

Sutter County. 2010. Sutter County Climate Action Plan. Yuba City, CA. Prepared by PBS&J, San Bernardino, CA. July 2010. Available: https://www.suttercounty.org/home/show publisheddocument/2798/635555790953130000. July 2010. Accessed January 13, 2021.

———. 2011. Sutter County General Plan. Adopted by Sutter County Board of Supervisors on March 29, 2011, Resolution No. 11-029. Available: https://www.suttercounty.org/home/showpublisheddocument/2874/635555888741800000. Accessed January 13, 2021.

The White House. 2021. Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis. January 20, 2021. Available: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/. Accessed January 21, 2021.

VanRheenen, N. T., A. W. Wood, and R. Palmer. 2004. Potential Implications of PCM Climate Change Scenarios for Sacramento–San Joaquin River Basin Hydrology and Water Resources. Climatic Change 62(1):257–281. January 2004.

Wong-Parodi, G., and B. Fischhoff. 2015. The Impacts of Political Cues and Practical Information on Climate Change Decisions. Available: https://iopscience.iop.org/article/10.1088/1748-9326/10/3/034004/pdf. Accessed July 2, 2021.

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CHAPTER 5
Mitigation Monitoring and Reporting Program

5.1 Introduction

Public Resources Code Section 21081.6 and Section 15097 of the California Environmental Quality Act (CEQA) Guidelines require public agencies to establish monitoring or reporting programs for projects approved by a public agency whenever approval involves the adoption of either a mitigated negative declaration or specified environmental findings related to environmental impact reports.

This Mitigation Monitoring and Reporting Program (MMRP) has been developed to help ensure that the California Department of Water Resources (DWR) carries out the adopted measures to mitigate and/or avoid significant environmental impacts associated with the implementation of the Tisdale Weir Rehabilitation and Fish Passage Project (Proposed Project).

This MMRP is intended to be used by DWR to ensure compliance with mitigation measures during project implementation. Mitigation measures identified in this MMRP were developed as part of the environmental impact report (EIR) process for the Proposed Project.

5.2 MMRP Components

The components of Table 5-1, which contains applicable mitigation measures, are addressed briefly below.

Impact: This column summarizes the impact stated in the Draft EIR.

Mitigation Measure: All mitigation measures identified in the Tisdale Weir Rehabilitation and Fish Passage Project Draft EIR are presented, as revised in the Final EIR, and numbered accordingly.

Responsibility for Implementing: This item identifies the entity that will undertake the required mitigation.

Responsibility for Monitoring: DWR is primarily responsible for ensuring that mitigation measures are successfully implemented. Within DWR, a number of departments and divisions would have responsibility for monitoring some aspect of the overall project. DWR may contract out for these services and/or make them part of the construction specifications, and other agencies

may also be responsible for monitoring the implementation of mitigation measures. As a result, more than one monitoring party may be identified.

Monitoring and Reporting Actions: For every mitigation measure, one or more actions are described. The actions delineate the means by which the mitigation measures will be implemented, and, in some instances, the criteria for determining whether a measure has been successfully implemented. Where mitigation measures are particularly detailed, the action may refer back to the measure.

Timing: Implementation of the action must occur prior to or during some part of project approval, project design or construction or on an ongoing basis. The timing for each measure is identified.

TABLE 5-1: TISDALE WEIR REHABILITATION AND FISH PASSAGE PROJECT, MITIGATION MONITORING AND REPORTING PROGRAM

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
3.3 Air Quality	3.3-2: Construction of the Proposed Project could result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.	Mitigation Measure 3.3-2a (Proposed Project, South Notch Alternative, North and South Notches Alternative, and North Notch with Modified Gate Operation Alternative): To the greatest extent practicable, off-road diesel construction equipment shall be equipped with the most effective verified diesel emissions control strategies available for the engine type. In this case, the best available control strategy is implementation of Tier 4 Final engines as certified by CARB and EPA. The contractor shall ensure that all construction equipment is properly maintained and tuned in accordance with the manufacturer's specifications. DWR will verify compliance by submitting an equipment inventory and certification statement prepared by the contractor to FRAQMD.	DWR, construction contractor	DWR, construction contractor	Use off-road diesel construction equipment with Tier 4 Final engines as certified by CARB and EPA to the greatest extent practicable. Properly maintain and tune construction equipment in accordance with the manufacturer's specifications. Verify compliance by submitting an equipment inventory and certification statement prepared by the contractor to FRAQMD.	During construction.
3.3 Air Quality (continued)	3.3-2 (continued)	Mitigation Measure 3.3-2b (Proposed Project, South Notch Alternative, North and South Notches Alternative, and North Notch with Modified Gate Operation Alternative): Once the environmental analysis has been completed and the project is approved, DWR and the construction contractor shall implement the following measures, with oversight by FRAQMD: 1. Implement Mitigation Measure 3.3-1a; use low-emissions construction equipment (verified diesel emissions control strategies) to the maximum extent feasible and estimate the NOX emissions reductions associated with such equipment. 2. If DWR is unable to secure Tier 4 Final engines for the emissions reductions required to reduce NOX emissions to below the significance threshold, FRAQMD's off-site mitigation program (described below) shall be engaged to meet these additional emission reduction requirements. The precise amount of off-site mitigation will be determined through the submittal of an equipment inventory and certification statement to FRAQMD as discussed above. 3. Pay Voluntary Off-Site Mitigation Program fees to FRAQMD, currently estimated at $30,000 per weighted ton of NOX emissions in excess of the significance threshold, plus an administrative fee of no more than 10 percent of the total fee. These fees shall fund one or more emissions reduction projects in the northern SVAB (Yuba and Sutter Counties) to offset NOX emissions exceeding the threshold. The exact fee shall be determined by FRAQMD and shall be based on the types of projects available at the time of payment. 4. Once the project is approved, submit a memorandum of understanding to FRAQMD containing the following information: • Source of emissions • Estimate of emissions • Amount of off-site mitigation requested to be purchased • Date the off-site mitigation fee will be provided to FRAQMD (either as a one-time payment before the start of project work or as a down payment, with the remainder due at the end of the construction season) Once the MOU is submitted, a mitigation agreement between DWR and FRAQMD will be finalized. The agreement will specify the fees and timing of payment and will be executed by DWR and FRAQMD. FRAQMD shall calculate the total Voluntary Off-Site Mitigation Program fee by summing the maximum daily construction emissions of NOX (lb/day) in excess of the significance threshold (i.e., 25 lb/day) after implementation of all other available on-site mitigation, and multiplying by the final estimate of construction workdays per year in addition to the 10 percent administrative fee. The fee represents the offset of any remaining NOX emissions above the threshold by funding	DWR, construction contractor	DWR, construction contractor	Use low-emissions (Tier 4 Final engines) construction equipment, to the maximum extent feasible. If not feasible, implement FRAQMD's off-site mitigation program, including paying the voluntary Off-Site Mitigation Program fees. Submit a memorandum of understanding to FRAQMD.	Before and during construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
		emissions reduction programs in the SVAB (e.g., replacing old diesel-powered school buses with low-emissions models).				
3.3 Air Quality (continued)	3.3-2 (continued)	**Mitigation Measure 3.3-2c (Proposed Project, South Notch Alternative, North and South Notches Alternative, and North Notch with Modified Gate Operation Alternative):** As part of the project, DWR will implement the following FRAQMD best management practices (BMPs), which are required by FRAQMD for projects that exceed one or more of its significance thresholds: **BMP 1:** All grading operations on the project should be suspended when winds exceed 20 miles per hour or when winds carry dust beyond the property line despite implementation of all feasible dust control measures. **BMP 2:** Construction sites shall be watered as necessary to prevent fugitive dust violations. **BMP 3:** An operational water truck should be available at all times. Apply water to control dust as needed to prevent visible emissions violations and off-site dust impacts. **BMP 4:** On-site dirt piles or other stockpiled particulate matter should be covered, windbreaks installed, and water and/or soil stabilizers employed to reduce wind- blown dust emissions. Incorporate the use of approved nontoxic soil stabilizers according to manufacturer's specifications to all inactive construction areas. **BMP 5:** All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free-fall distance and fugitive dust emissions. **BMP 6:** Apply approved chemical soil stabilizers according to the manufacturers' specifications, to all inactive construction areas (previously graded areas that remain inactive for 96 hours) including unpaved roads and employee/equipment parking areas. **BMP 7:** To prevent track-out, wheel washers should be installed where project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out. **BMP 8:** Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the project area. **BMP 10:** Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, on-site enforcement, and signage. **BMP 11:** Reestablish ground cover on the construction site as soon as possible, through seeding and watering. **BMP 12:** Disposal by Burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited in the project area. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, et al.) may be conducted in the project area unless the project proponent successfully applies and obtains a burn permit from the FRAQMD, the Levee District, the Water District or Duck Preserve with local jurisdiction and follows all requirements of the FRAQMD Regulation II. DWR must implement all FRAQMD requirements before burning.	DWR, construction contractor	DWR, construction contractor	Implement FRAQMD best management practices.	During construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
3.3 Air Quality (continued)	3.3-4: Construction of the Proposed Project could temporarily add to localized and regional cumulative air quality impacts.	**Mitigation Measure 3.3-4 (Proposed Project, South Notch Alternative, North and South Notches Alternative, and North Notch with Modified Gate Operation Alternative): Implement Mitigation Measures 3.3-2a through 3.3-2c.**	DWR	DWR	See above.	See above.
3.3 Air Quality (continued)	3.4-2: Implementation of the Proposed Project could cause disturbance or mortality of valley elderberry longhorn beetle and loss of its habitat (elderberry shrubs).	**Mitigation Measure 3.4-2a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** All project activities will avoid suitable elderberry shrubs, defined as shrubs with stem diameters of at least 1 inch when measured at ground level. Shrubs will be flagged or temporarily fenced, as needed, with guidance from a designated biologist. These areas will be avoided by all project personnel and activities. When feasible, fencing will be placed at least 5 feet from the dripline of each shrub, unless otherwise approved by USFWS.	DWR	DWR, qualified biologist	Flag or temporarily fence suitable elderberry shrubs and avoid areas. Placed fencing at least 5 feet from the dripline of each shrub as feasible, unless otherwise approved by USFWS.	Before and during construction.
3.4 Biological Resources	3.4-2 (continued)	**Mitigation Measure 3.4-2b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** DWR will not use insecticides, herbicides, or other chemicals that might harm the beetle or its host plant within established buffers (20 feet) around elderberry shrubs. Mowing will not occur within 5 feet of any suitable elderberry stem (i.e., a stem 1 inch in diameter or greater).	DWR	DWR	Verify that a 20-foot and 5-foot maintenance buffers are established around elderberry shrubs and suitable elderberry stems.	During construction.
3.4 Biological Resources (continued)	3.4-2 (continued)	**Mitigation Measure 3.4-2c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If it is determined that any project activity has the potential to result in the incidental take of VELB despite implementation of Mitigation Measures 3.4-2a and 3.4-2b, DWR will obtain take authorization under the FESA. DWR will implement all measures developed through consultation with USFWS to mitigate the authorized take. The mitigation approach will conform to requirements stipulated by USFWS in its Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (USFWS, 2017a).	DWR	DWR	Determine if project maintenance activities would result in incidental take of VELB, obtain incidental take authorization from USFWS if needed and verify that incidental take authorization is obtained.	Before construction.
3.4 Biological Resources (continued)	3.4-2 (continued)	**Mitigation Measure 3.4-3a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** To the extent feasible, DWR will limit project construction and maintenance activities within the project footprint outside the Tisdale Bypass to the active season for GGS, May 1 to October 1. DWR may also conduct work between October 2 and November 1 or between April 1 and April 30 if ambient air temperatures exceed 75ºF during the work and maximum daily air temperatures have exceeded approximately 75ºF for at least 3 consecutive days immediately preceding the work.	DWR	DWR	Document that project construction and maintenance activities have occurred within designated work windows for GGS.	During construction and maintenance activities.
3.4 Biological Resources (continued)	3.4-2 (continued)	**Mitigation Measure 3.4-3b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** A designated biologist will present a worker education and awareness program to all on-site construction personnel before materials staging or ground-disturbing activities begin. The program will describe how best to avoid impacts on GGS and will address the topics of species descriptions and identification, life history, and habitat requirements during various life stages. This education program can include handouts, illustrations, photographs, and project maps showing areas of minimization and avoidance measures. All construction personnel will sign a sign-in sheet documenting that they received the training.	DWR	DWR, qualified biologist	Present GGS worker education and awareness program to all on-site construction personnel. Ensure that all construction personnel sign a sign-in sheet documenting that they received the training.	Before construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
3.4 Biological Resources (continued)	3.4-2 (continued)	**Mitigation Measure 3.4-3c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** DWR will ensure that a designated biologist surveys the project footprint for burrows, soil cracks, crevices, and other features potentially suitable for use by GGS within terrestrial habitat located within 200 feet of suitable aquatic habitat in the Oji Ditch and seasonal wetland, excluding any areas within this buffer that may overlap the Tisdale Bypass. Surveys will be completed no more than 3 days before construction or maintenance activities in terrestrial habitat that could support GGS. Any identified burrows, soil cracks, crevices, or other habitat features will be flagged by the designated biologist or otherwise identified as biologically sensitive areas. DWR will avoid these biologically sensitive areas during construction and subsequent maintenance. If activities temporarily stop for more than 7 days, the designated biologist will repeat the surveys for soil cracks and similar features, as described above, before construction work resumes. If feasible and accepted by CDFW and USFWS, DWR may also use other survey techniques (e.g., scent-detection dogs) as an alternative or supplement to surveys conducted by the designated biologist. Such surveys will identify cracks and burrows to help determine occupancy by GGS, and these burrows will be flagged as biologically sensitive areas to be avoided during subsequent work as described above.	DWR	DWR	Survey areas of planned ground disturbance for burrows, soil cracks, and crevices that may be suitable for use by GGS. Mark any identified habitat features as biologically sensitive areas. Avoid biologically sensitive areas during maintenance activities. Repeat surveys for biological sensitive areas if activities temporarily stop for longer than 7 days and document results.	Before and during construction activities.
3.4 Biological Resources (continued)	3.4-2 (continued)	**Mitigation Measure 3.4-3d (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** GGS exclusion fencing will be installed consistent with USFWS and CDFW guidance to divert moving snakes from the active construction zone during periods when GGS are active. This exclusion fencing will be installed south of the Oji Ditch between the ditch and the staging area; north of the Sutter Mutual Main Canal between the staging area and the canal; and between the canal that runs along the west side of Reclamation Road and the spoils site (Figure 3.4-2). DWR will also install and regularly maintain exclusion fencing around the southern and western margins of the seasonal wetland to redirect any GGS using the pond away from Garmire Road and the nearby construction access route on the Tisdale Bypass north levee. Figure 3.4-2 delineates the maximum anticipated GGS fencing needed to ensure that there is a barrier between any active construction work areas within the action area and any potential GGS aquatic habitat within 200 feet (note that natural features such as dense riparian forest also can function as adequate barriers to ingress of GGS into active work areas). If further engineering analysis determines that a smaller spoils area will be needed to accommodate the Proposed Project, a smaller extent of GGS exclusion fencing may potentially be utilized. Upon agreement with USFWS, DWR will ensure that any reduction in the extent of GGS fencing will still ensure that GGS fencing is installed along the margins of any potential GGS aquatic habitat located within 200 feet of active work areas (unless already obviated by the presence of natural buffers to GGS movement). The exclusion fencing will be installed before the start of construction. DWR will maintain the exclusion fencing for the duration of the Proposed Project's construction activities. A designated biologist will inspect the exclusion fence daily to verify the condition and function of the fence and to verify that snakes are not becoming trapped in the excluded areas.	DWR	DWR	Install GGS exclusion fencing. Document that exclusionary fencing is inspected daily while construction activities are being conducted to verify the condition and function of the fence and to verify that GGS do not get trapped in the excluded area.	Before and during construction activities.
3.4 Biological Resources (continued)	3.4-2 (continued)	**Mitigation Measure 3.4-3e (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If a GGS individual is observed within the project footprint, DWR will stop work and notify a designated biologist immediately. This biologist will be either a USFWS	DWR, construction contractor	DWR, qualified biologist	Ensure that GGS leaves the project site. Observe GGS area for remainder of the workday. Notify CDFW and USFWS of GGS observation.	During construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
		representative, a biologist holding a USFWS 10(a)(1)(A) permit, or if DWR has obtained a take permit under CESA, a designated biologist with knowledge and experience in the biology, natural history, capture, and handling of GGS. The snake will be allowed to leave on its own, and the designated biologist will remain in the area for the remainder of the workday to ensure that the snake is not harmed. Alternatively, with prior approval by CDFW and USFWS, the designated biologist may capture the snake and relocate it unharmed to suitable habitat at least 200 feet from the project area. DWR will notify CDFW and USFWS by telephone or email within 24 hours of a GGS observation during project activities. If the snake does not voluntarily leave the project area and cannot be captured and relocated unharmed, project activities will remain halted to prevent harm to the snake, and CDFW and USFWS will be consulted to identify next steps. DWR will implement the measures recommended by CDFW and USFWS before resuming project work in the area.				
3.4 Biological Resources (continued)	3.4-4: Implementation of the Proposed Project could cause disturbance or mortality of and loss of suitable habitat for western pond turtle.	**Mitigation Measure 3.4-4a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operations Alternative, and Tisdale Weir Structural Improvements Alternative):** A designated biologist will present a worker education and awareness program to all on-site personnel before materials staging or ground-disturbing activities begin. The biologist will explain to construction workers how best to avoid impacts on western pond turtle and will address the topics of species descriptions and identification, life history, and habitat requirements during various life stages. This education program can include handouts, illustrations, photographs, and project mapping showing areas of minimization and avoidance measures. The crew members will sign a sign-in sheet documenting that they received the training.	DWR	DWR, qualified biologist	Present western pond turtle worker education and awarenessprogram to all on-site construction personnel. Ensure that all construction personnel sign a sign-in sheet documenting that they received the training.	Before construction.
3.4 Biological Resources (continued)	3.4-4 (continued)	**Mitigation Measure 3.4-4b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** A designated biologist will conduct a preconstruction survey within 48 hours before the establishment of staging areas and the start of construction and maintenance activities.	DWR	DWR, qualified biologist	Conduct preconstruction survey for western pond turtle. Document findings of preconstruction survey.	Within 48 hours prior to construction and maintenance activities.
3.4 Biological Resources (continued)	3.4-4 (continued)	**Mitigation Measure 3.4-4c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative**): Should a western pond turtle be observed during the preconstruction survey and it is determined that relocation is necessary, a relocation plan will be developed by a designated biologist in consultation with CDFW. The biologist will identify the location using GPS coordinates. DWR will revisit these locations within 8 hours of ground disturbance. A designated biologist may relocate the turtle found within the construction footprint to suitable habitat away from the construction zone.	DWR	DWR, qualified biologist	Develop, implement, and document implementation of western pond turtle relocation plan, if needed.	Before construction.
3.4 Biological Resources (continued)	3.4-4 (continued)	**Mitigation Measure 3.4-4d (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative**): If a western pond turtle is observed on land within the active construction zone, specifically in areas of ground disturbance, access routes, stockpile areas, or staging areas, DWR will immediately stop work within approximately 200 feet of the turtle and notify a designated biologist. If possible, the turtle will be allowed to leave on its own, and the designated biologist will remain in the area for the remainder of the workday to ensure that the turtle is not harmed. Alternatively, with prior CDFW approval, the designated biologist may capture the turtle and relocate it unharmed to suitable habitat at least 200 feet from the project area. If the turtle does not voluntarily leave the project area and cannot be captured and relocated unharmed, construction activities within approximately 200 feet of the turtle will stop to prevent	DWR, construction contractor	DWR, qualified biologist	Ensure that western pond turtle leaves the project site. Observe western pond turtle area for remainder of the workday. Document western pond turtle observation.	During construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
		harm to the turtle, and CDFW will be consulted to identify next steps. DWR will implement the measures recommended by CDFW before resuming project activities in the area.				
3.4 Biological Resources (continued)	3.4-5: Implementation of the Proposed Project could cause disturbance or mortality of and loss of suitable habitat for bird species.	**Mitigation Measure 3.4-5a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If vegetation removal is to begin during the nesting season (February 15 to August 31), a designated biologist will conduct a preconstruction nesting survey before the vegetation is removed. The preconstruction survey will be conducted within 14 days before the start of ground-disturbing activities. If the survey shows no evidence of active nests, no additional measures are recommended. If construction does not begin within 14 days of the preconstruction survey, or if it halts for more than 14 days, an additional preconstruction survey is recommended.	DWR, construction contractor	DWR, qualified biologist	Conduct preconstruction nesting bird survey before vegetation removal between February 14 to August 31. Document results of preconstruction survey.	Within 14 days before the start of ground-disturbing activities.
3.4 Biological Resources (continued)	3.4-5 (continued)	**Mitigation Measure 3.4-5b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative**): If any active nests are located in the project area, the construction contractor will establish an appropriate buffer zone around the nests, as determined by a designated biologist. Typical buffer zones are 100 feet for migratory bird nests, 250 feet for raptor nests, and 500 feet for western yellow-billed cuckoo, unless a qualified CDFW biologist determines that smaller buffers would be sufficient to avoid impacts. Factors to be considered for determining buffer size will include the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until a qualified CDFW biologist has determined that the young have fledged and are no longer reliant upon parental care for survival. The designated biologist will monitor nests daily during construction to evaluate whether construction activities have the potential to disturb nesting. All feasible avoidance measures will be implemented (e.g., vehicle and pedestrian access under the Garmire Road Bridge will be reduced). If any project construction work is to occur within 100 feet of swallow nests located under the Garmire Road Bridge, the designated biologist will elect to implement a stop-work authority until concerning swallow behavior is alleviated if there is concern that the construction activities may result in incidental take of the migratory species.	DWR, construction contractor	DWR, qualified biologist	Verify that buffer zones are established around any active nests located in the project area. Document that nests are monitored daily during construction to evaluate whether construction activities have the potential to disturb nesting.	During construction.
3.4 Biological Resources (continued)	3.4-5 (continued)	**Mitigation Measure 3.4-5c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative**): If mountain plovers are observed foraging in the project area or adjacent agricultural fields during project construction or maintenance activities, activities within 100 feet will cease until they disperse. This species will be covered under the working training classes presented to construction crews by a designated biologist.	DWR, construction contractor	DWR	Cease activities if mountain plovers are observed foraging in the project area or adjacent agricultural fields during project construction or maintenance activities until they disperse and document mountain plover observation.	During construction.
3.4 Biological Resources (continued)	3.4-5 (continued)	**Mitigation Measure 3.4-5d (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** A designated biologist will conduct a minimum of one protocol-level preconstruction survey. The survey(s) will occur during the recommended survey periods for the nesting season that coincides with the start of construction activities, in accordance with the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee, 2000). Where legally permitted, the designated biologist will conduct surveys for nesting Swainson's hawk within 0.25 mile of the project area.	DWR	DWR, qualified biologist	Conduct preconstruction survey for nesting Swainson's hawk. Document results of preconstruction survey.	Before construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
3.4 Biological Resources (continued)	3.4-5 (continued)	**Mitigation Measure 3.4-5e (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If active Swainson's hawk nests are found within 0.5 mile of construction or maintenance activities, the findings will be reported to CDFW following the preconstruction survey. For purposes of this avoidance and minimization requirement, "construction activities" are defined to include the operation of heavy equipment during construction (use of cranes or draglines, new rock-crushing activities) or other project- related activities that could cause nest abandonment or forced fledging within 0.5 mile of a nest site between March 1 and September 15. Should an active nest be present within 0.5 mile of a construction area, DWR will consult with CDFW to establish appropriate avoidance measures; determine whether high-visibility construction fencing will be erected around the buffer zone; and implement a monitoring and reporting program that includes monitoring either continuously or periodically, depending on the construction or maintenance activities and level of disturbance, before any construction activities occur within 0.5 mile of the nest. Should the designated biologist determine that the construction activities are disturbing the nest, the biologist will halt construction activities until DWR consults with CDFW. If the biologist determines that construction activities cause or contribute to a bird being flushed from the nest, or observes other signs of disturbance of a nesting bird at a level that has potential to cause nest failure, the existing buffer distance will be reevaluated by the qualified biologist and in consultation with CDFW and revised or increased as necessary. The construction activities will not resume until CDFW determines that they will not result in abandonment of the nest site. Should the designated biologist determine that construction activities within the buffer zone have not disturbed the nest, DWR will report to CDFW summarizing the survey results within 30 days after the final monitoring event, and no further avoidance and minimization measures for nesting habitat are recommended.	DWR	DWR, qualified biologist	Report findings of active Swainson's hawk nests to CDFW and consult with CFDW to establish appropriate avoidance measures; determine whether high-visibility construction fencing will be erected around the buffer zone; and implement a monitoring and reporting program. Report to CDFW summarizing the survey results within 30 days after the final monitoring event.	Before any construction activities occur within 0.5 mile of Swainson's hawk nest.
3.4 Biological Resources (continued)	3.4-6: Implementation of the Proposed Project could cause disturbance or mortality of and loss of suitable roosting habitat for special-status bats.	**Mitigation Measure 3.4-6a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Within 14 days before the beginning of removal of suitable bat roosting trees (larger than 24 inches in diameter at breast height), a designated biologist will conduct a preconstruction survey for special-status bats. If no special-status bats are observed roosting, no additional measures are required for the tree removal. If tree removal does not begin within 14 days of the preconstruction survey, or if removal halts for more than 14 days, a new survey will be conducted.	DWR	DWR, qualified biologist	Conduct preconstruction survey for special-status bats. Document results of preconstruction survey.	Within 14 days before the beginning of removal of suitable bat roosting trees.
3.4 Biological Resources (continued)	3.4-6 (continued)	**Mitigation Measure 3.4-6b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If bats are found in the area where construction-related activities will occur, a minimum 100-foot avoidance buffer will be established around the roost/maternity area until it is no longer occupied. High-visibility fencing will be installed around the buffer and will remain in place until bats no longer occupy the tree or structure. The tree or structure will not be removed or modified until a designated biologist has determined that the bats are no longer occupying the roost. If construction activities must occur within the avoidance buffer, a designated biologist will monitor the activities either continuously or periodically during work, as determined by the biologist. The designated biologist will be empowered to stop activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special-status bats. If construction activities are stopped, the designated biologist will consult with CDFW to determine appropriate measures that DWR will implement to avoid adverse effects. Within 14 days before the start of work within 100 feet of the Garmire Road Bridge, a designated biologist will conduct a	DWR, construction contractor	DWR, qualified biologist	Verify that buffer zones are established if bats are found in the area where construction-related activities will occur. If necessary, document that roost/maternity areas are monitored continuously or periodically during work. Consult with CDFW as necessary to determine appropriate measures to implement.	Within 14 days before the start of work and during construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
		preconstruction emergence survey for special-status bats. If avoidance of maternity roosts is not feasible, additional mitigation will be developed in consultation with CDFW.				
3.4 Biological Resources (continued)	3.4-6 (continued)	**Mitigation Measure 3.4-6c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If construction activities must occur within the avoidance buffer, a designated biologist will monitor the work either continuously or periodically, as determined by the biologist. The designated biologist will be empowered to stop activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special-status bats. If construction activities are stopped, the designated biologist will consult with CDFW to determine the appropriate measures to implement to avoid adverse effects.	DWR	DWR, qualified biologist	Document that work is monitored continuously or periodically if construction activities must occur within the bat avoidance buffer. Consult with CDFW as necessary to determine appropriate measures to implement to avoid adverse effects.	During construction.
3.4 Biological Resources (continued)	3.4-7: Implementation of the Proposed Project could cause disturbance to fish species or their habitat by causing changes in water quality.	**Mitigation Measure 3.4-7a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Work will be suspended if Tisdale Weir is forecast to be overtopped during the construction window.	DWR, construction contractor	DWR	Stop work if Tisdale Weir is forecast to be overtopped during the construction window and document that work has been suspended.	During construction.
3.4 Biological Resources (continued)	3.4-7 (continued)	**Mitigation Measure 3.4-7b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** DWR and its construction contractor will implement the following best management practices to protect water quality: • The construction contractor will develop and implement a spill prevention, control, and countermeasure plan to minimize the potential for, and effects from, spills of hazardous, toxic, and petroleum substances during construction and maintenance. The plan will be completed before construction activities begin. The spill prevention, control, and countermeasure plan will describe containment facilities and practices, including refueling procedures and spill response actions for each material or waste and procedures for notifying the appropriate agencies. • Diesel fuel and oil will be used, stored, and disposed of in accordance with standard protocols for handling of hazardous materials. • All personnel using hazardous materials will be trained in emergency response and spill control. • All concrete washing and spoils dumping will occur in a designated location outside of jurisdictional waters, including the Tisdale Bypass. • Construction stockpiles will be covered or protected with soil stabilization measures (e.g., protection of seeding by erosion controls until vegetation is established, sodding, mulching, erosion control blankets, hydromulch, gravel) and a temporary sediment barrier to prevent blowoff or runoff during weather events. • Erosion control materials and devices for severe-weather events will be stored on-site for use as needed. • All work will occur when the Tisdale Bypass is dry. Areas with permanent open water will be protected from disturbance during excavation by installing silt fencing or other suitable best management practices around the features, or by leaving a buffer of 15 feet from the ponded areas that will be identified by stakes and flagging. Shallow ponded areas will not be affected until they have dried down.	DWR, construction contractor	DWR, construction contractor	Implement best management practices to protect water quality.	Before and during construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
		• Any excavated areas will be reseeded with an appropriate seed mix or otherwise treated to reduce erosion and/or siltation. • Erosion control measures will be placed in areas that are upslope of aquatic habitat, to prevent any soil or other materials from entering aquatic habitat. Silt fencing and/or natural/biodegradable erosion control measures (i.e., straw wattles and hay bales) will be used. Plastic monofilament netting (erosion control matting) will not be allowed because wildlife can become entangled in this type of erosion control material. • To address potential effects on receiving water quality during the construction period, DWR will prepare and comply with any requirements identified in a storm water pollution prevention plan to maintain water quality.				
3.4 Biological Resources (continued)	3.4-7 (continued)	**Mitigation Measure 3.4-7c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** DWR will conduct turbidity monitoring in the Sacramento River. The Basin Plan for the Sacramento River and San Joaquin River Basins (Fifth Edition) (Basin Plan) (Central Valley Regional Water Board, 2018) contains turbidity objectives. Specifically, the plan states: • Where natural turbidity is between 5 and 50 nephelometric turbidity units (NTU), turbidity levels may not be elevated by 20 percent above ambient conditions. • Where ambient conditions are between 50 and 100 NTU, conditions may not be increased by more than 10 NTU. • Where natural turbidity is greater than 100 NTU, increases will not exceed 10 percent. A sampling methodology for turbidity monitoring will be developed and implemented based on specific site conditions, project activities, and in consultation with the Central Valley Regional Water Board. If turbidity limits exceed Basin Plan standards, construction-related earth-disturbing activities will slow to a point that will alleviate the problem.	DWR	DWR	Conduct turbidity monitoring in the Sacramento River and document results of monitoring.	Before construction.
3.4 Biological Resources (continued)	3.4-8: Implementation of the Proposed Project could cause disturbance to fish species or their habitat by modifying aquatic habitat.	**Mitigation Measure 3.4-8a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If project activities must occur during non-daylight hours, a designated biologist will establish monitoring measures, including frequency and duration, based on fish species, individual behavior, and type of construction activities. When nighttime work cannot be avoided, nighttime lighting will be used only in the portion of the project area actively being worked on (limited to a minimum distance of 200 feet from habitat for FESA-listed fish species), and will be focused directly on the work area. Lights on work areas will be shielded and focused to minimize lighting of FESA-listed fish species habitat. If the work area is located near surface waters, the lighting will be shielded to avoid shining directly into the water.	DWR	DWR, qualified biologist	Establish monitoring measures if project activities must occur during non-daylight hours and document compliance with monitoring measures.	During construction.
3.4 Biological Resources (continued)	3.4-8 (continued)	**Mitigation Measure 3.4-8b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** DWR will submit a dewatering and fish rescue plan to NMFS and CDFW before construction. NMFS- and CDFW-approved fish biologists will conduct fish rescues in isolated pools and channels in the project area. These biologists will also rescue any fish trapped in the cofferdam area before dewatering. Fish rescue will also occur in the unlikely event that Sacramento River flows overtop the cofferdam. Methods used for capturing fish could include seining and dip netting. Water will be pumped and discharged back into the Sacramento River	DWR	DWR	Submit dewatering and fish rescue plan to NMFS and CDFW.	Before construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
		from the cofferdam areas as needed to facilitate fish collection activities. Pump intakes will be fitted with appropriately sized, NMFS- and/or CDFW-approved fish screens to prevent fish from becoming entrained.				
3.4 Biological Resources (continued)	3.4-8 (continued)	**Mitigation Measure 3.4-8c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** The Technical Working Group, consisting of qualified technical experts from DWR, NMFS, and CDFW, will develop triggers for fish rescue events to occur during operation of the Proposed Project. A fish rescue could be needed because of a physical obstruction, adverse water quality within the fish passage facilities, observations that fish in the basin are in poor health, or other reasons. If deemed necessary, a fish rescue plan will be developed and will include the same elements as described in Mitigation Measure 3.4-8b.	DWR, Technical Working Group consisting of qualified technical experts from DWR, NMFS, and CDFW	DWR	Develop triggers for fish rescue events and fish rescue plan if necessary.	During operation.
3.4 Biological Resources (continued)	3.4-9: Construction of the Proposed Project could cause disturbance to fish species or their habitat by causing hydrostatic pressure waves, noise, and vibration.	**Mitigation Measure 3.4-9 (Proposed Project, South Notch Alternative, North and South Notches Alternative, and North Notch with Modified Gate Operation Alternative):** To avoid or minimize the potential for injury or mortality of listed fish species caused by pile-driving noise, all pile driving will be restricted to the in-water work period (July 1 to October 1). Non-impact pile driving methods (e.g., vibratory) or other attenuation methods, as needed, will be used to avoid or minimize noise levels that exceed the current thresholds established by NMFS. A vibratory hammer is preferred; however, if an impact hammer is needed to drive piles, noise levels should not exceed the following threshold levels (for fish greater than 2 grams): • Peak sound pressure level = 206 decibels (dB re 1 micropascal [µPa]) • Accumulated sound exposure level = 187 decibels (dB re 1 µPa2-s) A designated biologist will be present during cofferdam installation and removal to monitor construction work and compliance with the terms and conditions of permits. If required by permit conditions, hydroacoustic monitoring will be performed to monitor underwater sound levels and ensure compliance with established thresholds. If any salmonids, sturgeon, or lamprey are found dead or injured during pile- driving activities, NMFS will be notified immediately and in- water pile driving will cease. To comply with the thresholds, DWR will employ the following mitigation measures: • An impact hammer cushion block will be used. • Impact hammers will be used only during daylight hours, and will initially be used at low energy levels and reduced impact frequency. (Applied energy and frequency will be gradually increased until the necessary full force and frequency are achieved). • If noise thresholds are not met using the above measures, DWR will consult with the regulatory agencies on applying other mitigation methods, as feasible (e.g., bubble curtains and/or reducing the daily duration of pile-driving activities).	DWR	DWR, qualified biologist	Verify that pile driving is restricted to the in-water work period. Document compliance with mitigation measures and permit terms and conditions during cofferdam installation and removal. Notify NMFS immediately if salmonids, sturgeon, or lamprey are found dead or injured during pile-driving activities.	During construction.
3.4 Biological Resources (continued)	3.4-12: Construction of the Proposed Project could cause the loss or degradation of riparian forest.	**Mitigation Measure 3.4-12a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Stakes and flagging will be used at the edge of the construction footprint if work is anticipated to occur within 50 feet of riparian areas that are proposed for avoidance. A biological monitor will be present during initial grading or vegetation-clearing activities within 50 feet of riparian areas proposed for avoidance.	DWR	DWR, qualified biologist	Verify that a stakes and flagging have been used at the edge of the construction footprint if work is anticipated to occur within 50 feet of riparian areas that are proposed for avoidance. Document monitoring activities within 50 feet of riparian areas.	During construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
3.4 Biological Resources (continued)	3.4-12 (continued)	**Mitigation Measure 3.4-12b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Tree mitigation will be based on the number or area of trees actually affected by project construction, as determined by a certified arborist. DWR will catalog affected trees before project construction, and will prepare a compensatory mitigation plan for the trees that includes monitoring and reporting. Compensatory mitigation may include the purchase of credits from an approved off-site bank or on-site tree plantings. If on-site restoration is required, DWR will submit the mitigation plan to the Central Valley Flood Protection Board for review with the encroachment permit application.	DWR	DWR, certified arborist	Catalog affected trees and prepare compensatory mitigation plan. If on-site restoration is require, submit the mitigation plan to the Central Valley Flood Protection Board for review with the encroachment permit application.	Before construction.
3.4 Biological Resources (continued)	3.4-12 (continued)	**Mitigation Measure 3.4-12c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Should removing vegetation within the riparian forest be necessary, DWR will prepare an invasive plant management plan for the plants identified by the California Invasive Plant Council as having a moderate or high level of invasiveness and plants considered locally invasive. The contractor will implement the management plan's recommendations for the affected riparian forest in the construction area. In addition, the contractor will implement the following best management practices to prevent the introduction and spread of invasive plant species during construction: • All construction equipment will be washed and cleaned of debris before entering the project area to prevent new invasive plant species from entering the project site. • Straw bales and other vegetative materials used for erosion control will be certified weed-free. • All revegetation materials (e.g., seed mixes and mulches) will consist of plant species native to Sutter County, certified weed-free. All seeds and container plants will be obtained from locally adapted genetic stock that is free from fungal pathogens. • In areas requiring weed control, effective methods for removal may vary depending on the species being controlled. Typical methods include hand removal, mowing, or application of herbicides. Herbicides will be used consistent with federal, State, and local requirements. These requirements include the restrictions on herbicide use specified by resource agencies to prevent impacts on aquatic habitats, listed plant or wildlife species, or their habitats. All herbicides will be used in accordance with any guidance on the label that takes into consideration water quality and wildlife concerns. • Any areas to be revegetated will be replanted with a native vegetation plant and/or seed mix.	DWR	DWR	Prepare and document implementation of invasive plant management plan. Document implementation of best management practices to prevent the introduction and spread of invasive plant species during construction.	Before and during construction.
3.4 Biological Resources (continued)	3.4-13: Construction of the Proposed Project could cause the loss or deterioration of wetlands and waters of the United States and State.	**Mitigation Measure (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Implement Mitigation Measure 3.4-7b.	DWR, construction contractor	DWR, construction contractor	See above.	See above.
3.4 Biological Resources (continued)	3.4-13 (continued)	**Mitigation Measure 3.4-13 (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Silt fencing will be erected at the edge of the construction/maintenance footprint in advance of work anticipated to occur within 50 feet of the Sacramento River or the seasonal wetland. A biological monitor will be present during fence installation and during initial grading or vegetation clearing activities within 50 feet of the potentially jurisdictional features proposed for avoidance.	DWR	DWR, qualified biologist	Verify that silt fencing was been erected at the edge of the construction/maintenance footprint. Document monitoring activities within 50 feet of potentially jurisdictional features.	Before and during construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
3.4 Biological Resources (continued)	3.4-16: Implementation of the Proposed Project could contribute to cumulative temporary and permanent loss of sensitive habitats and impacts on special-status species.	**Mitigation Measures (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Implement Mitigation Measures 3.4-2a, 3.4-2b, 3.4-2c, 3.4-3a, 3.4-3b, 3.4-3c, 3.4-3d, 3.4-3e, 3.4-4a, 3.4-4b, 3.4-4c, 3.4-4d, 3.4-5a, 3.4-5b, 3.4-5c, 3.4-5d, 3.4-5e, 3.4-6a, 3.4-6b, 3.4-6c, 3.4-7a, 3.4-7b, 3.4-7c, 3.4-8a, 3.4-8b, 3.4-8c, 3.4-9, 3.4-12a, 3.4-12b, 3.4-12c, and 3.4-13.	DWR	DWR	See above.	See above.
3.5 Cultural Resources	3.5-1: Implementation of the Proposed Project could cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines Section 15064.5.	**Mitigation Measure 3.5-1a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Before construction, a qualified archaeologist shall prepare a cultural resources awareness and sensitivity training program for all construction and field workers involved in ground-disturbing activities. A "qualified archaeologist" is defined as one who meets the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology and has expertise in California archaeology. Before DWR provides this training, an advance copy shall be shared with culturally affiliated California Native American Tribes to confirm that it captures all the elements of awareness and sensitivity training associated with the work. The training program developed shall include a presentation that covers, at minimum, the types of cultural resources common to the area, regulatory protections for cultural resources, and the protocol for unanticipated discovery of archaeological resources (see Mitigation Measure 3.5-1b). Written materials associated with the program shall be provided to project personnel as appropriate. Personnel assigned to work in areas of ground-disturbing activities shall receive the training before starting work in these areas.	DWR	DWR, qualified archaeologist	Prepare and provide cultural resources awareness and sensitivity training program. Document that all construction and field workers have received the training. Document that culturally affiliated California Native American Tribes have received an copy of the training in advance.	Before construction.
3.5 Cultural Resources (continued)	3.5-1 (continued)	**Mitigation Measure 3.5-1b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If historic-era archaeological resources are encountered during Project development or operation, all activity within 100 feet of the find shall cease and the find shall be flagged for avoidance. DWR and a qualified archaeologist shall be immediately informed of the discovery. A "qualified archaeologist" is defined as one who meets the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology and has expertise in California archaeology. The qualified archaeologist shall inspect the discovery and shall notify DWR of their initial assessment. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse. If DWR determines, based on recommendations from the qualified archaeologist, that the resource may qualify as a historical resource or unique archaeological resource (as defined in State CEQA Guidelines Section 15064.5), then the resource shall be avoided if feasible. Avoidance means that no activities associated with the project may affect cultural resources within the boundaries of the resource or any defined buffer zones. If avoidance is not feasible, DWR shall consult with a qualified archaeologist and other appropriate interested parties to determine treatment measures to minimize or mitigate any potential impacts on the resource pursuant to PRC Section 21083.2 and State CEQA Guidelines Section 15126.4. Once treatment measures have been determined, DWR shall prepare and implement an Archaeological Resources Management Plan that outlines the treatment measures for the resource. Treatment measures typically consist of two steps: • Determine whether the resource qualifies as a historical resource, unique archaeological resource, or tribal cultural resource through historical or ethnographic research, evaluative testing (excavation), and laboratory analysis.	DWR	DWR, qualified archaeologist	Verify that construction or operation has been ceased and flagged within 100 feet of a historic-era archaeological resources find. Document inspection of the discovery. Prepare and document implementation of an Archaeological Resources Management Plan.	During construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
		• If it does qualify as one of these resource types, conduct data recovery (e.g., excavation, documentation, curation) targeting the recovery of the resource's important data. • The Archaeological Resources Management Plan shall include: • Background context. • Research themes and research questions for assessing potential resource significance. • Methods for evaluating the resource for California Register eligibility (e.g., ethnographic or historical research, evaluative test excavations, documentation, laboratory and geoarchaeological analyses, reporting) and, if an archaeological resource, for evaluating its eligibility as a unique archaeological resource under CEQA. • Data recovery methods (e.g., background methods, field methods, laboratory methods, documentation, consultation, curation, reporting), if the resource is determined to be a historical resource, unique archaeological resource, or tribal cultural resource. Any treatment measures implemented shall be documented in a professional-level technical report (e.g., Archaeological Testing Results Report, Archaeological Data Recovery Report, Ethnographic Report) to be authored by a qualified archaeologist and filed with CHRIS. Construction work at the location of the find may commence upon completion of the approved treatment and authorization by DWR. Work may proceed in other parts of the project area while the mitigation is being carried out.				
3.5 Cultural Resources (continued)	3.5-1 (continued)	**Mitigation Measure 3.5-1c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If a shipwreck and associated artifacts or other cultural resources on or in the tide and submerged lands of California are encountered during project development or operation, Mitigation Measure 3.5-1b and the following measures shall be implemented: • DWR shall initiate consultation with SLC staff within two • business days of the discovery. • Per PRC Section 6313(c), any submerged cultural resource remaining in State waters for more than 50 years is presumed to be archaeologically or historically significant. • If the find is a maritime archaeological resource, the qualified archaeologist with whom DWR consults shall have expertise in maritime archaeology. • DWR shall consult with the SLC regarding assessment of the find and development of any treatment measures to minimize or mitigate potential impacts on the resource, pursuant to PRC Section 21083.2 and State CEQA Guidelines Section 15126.4. The final disposition of archaeological, historical, and paleontological resources recovered on State lands under the jurisdiction of SLC must be approved by the SLC. • DWR shall submit to the SLC any report prepared for the resource as part of the assessment of the find and implementation of treatment measures to minimize or mitigate potential impacts.	DWR	DWR, qualified archaeologist	Verify that construction or operation has been ceased and flagged within 100 feet of a cultural resources find. Document shipwreck and associated artifacts or other cultural resources on or in the tide and submerged lands of California and consult with SLC regarding assessment of the find and development of any treatment measures to minimize or mitigate potential impacts on the resource. Document implementation of measures and submit report to SLC.	During construction.
3.5 Cultural Resources (continued)	3.5-2: Implementation of the Proposed Project could disturb human remains, including those	**Mitigation Measure 3.5-2 (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If human remains are uncovered during construction, all work shall immediately halt within	DWR	DWR	Verify that work has halted within 100 feet if human remains are uncovered and that Sutter County Coroner has been contacted. If the corner determines the remains are Native	During construction.

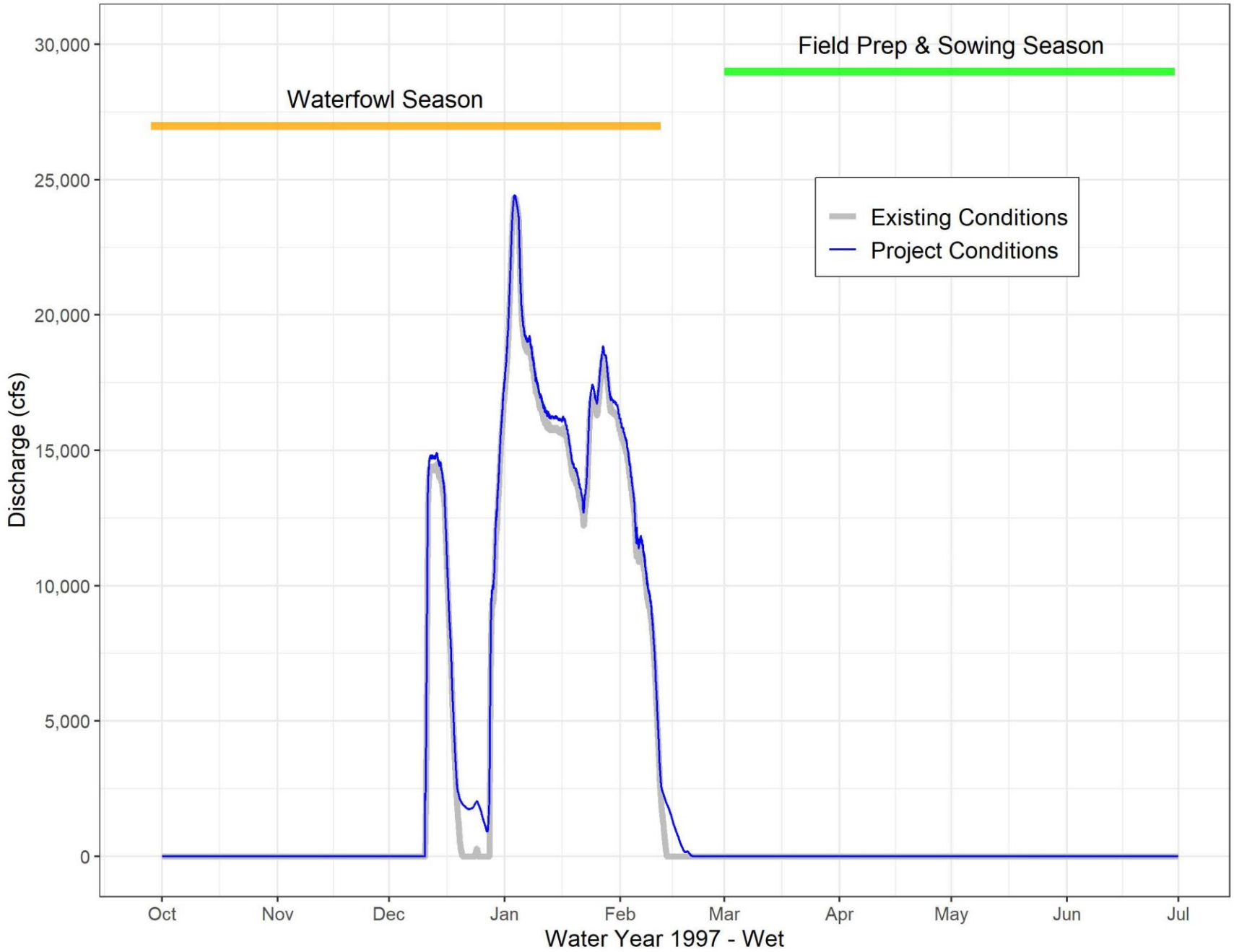
Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
	interred outside of dedicated cemeteries.	100 feet of the find and the Sutter County Coroner shall be contacted to evaluate the remains and follow the procedures and protocols set forth in State CEQA Guidelines Section 15064.5(e)(1). If the County Coroner determines that the remains are Native American, the County shall contact the NAHC, in accordance with Health and Safety Code Section 7050.5(c) and PRC Section 5097.98. See Mitigation Measure 3.9-1c, which pertains specifically to Native American remains.			American, the coroner will contact the NAHC. Document communication with NAHC, who will identify the person or persons believed most likely to be descended from the deceased Native American.	
3.5 Cultural Resources (continued)	3.5-3: Implementation of the Proposed Project could contribute to significant direct or indirect cumulative changes in the significance of an archaeological resource pursuant to State CEQA Guidelines Section 15064.5.	**Mitigation Measures (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative): Implement Mitigation Measures 3.5-1a, 3.5-1b, and 3.5-1c.**	DWR	DWR	See above.	See above.
3.5 Cultural Resources (continued)	3.5-4: Implementation of the Proposed Project could contribute to significant cumulative damage to unidentified human remains.	**Mitigation Measure (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative): Implement Mitigation Measure 3.5-2.**	DWR	DWR	See above.	See above.
3.7 Hydrology and Water Quality	3.7-1: Construction of the Proposed Project would involve activities that could result in a release of sediment and other pollutants that could substantially degrade receiving water quality.	**Mitigation Measures (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative): Implement Mitigation Measures 3.4-7a, 3.4-7b, and 3.4-7c**	DWR	DWR	See above.	See above.
3.7 Hydrology and Water Quality (continued)	3.7-6: Construction of the Proposed Project in combination with other projects being constructed in the project area could result in the release of sediment and other pollutants that could cumulatively degrade receiving water quality.	**Mitigation Measures (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative): Implement Mitigation Measures 3.4-7a, 3.4-7b, and 3.4-7c.**	DWR	DWR	See above.	See above.
3.9 Tribal Cultural Resources	3.9-1: Implementation of the Proposed Project could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.	**Mitigation Measure 3.9-1a (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** Before construction, DWR will prepare a cultural resources awareness and sensitivity training program for all construction and field workers involved in ground-disturbing activities. Before DWR provides this training, an advance copy of the material will be shared with culturally affiliated California Native American Tribes to confirm that it captures all elements of the awareness and sensitivity training associated with the work. The training program developed will include a presentation and awareness brochure that covers, at minimum, the types of potential tribal cultural resources common to the area; consequences of violating State laws and regulations; regulatory protections for tribal cultural resources; and the protocol for inadvertent discovery of archaeological resources (see Mitigation Measures 3.9-1b and 3.5-1b). Written materials associated with the program will be provided to project personnel as appropriate. Personnel assigned to work in areas of ground-disturbing activities will receive the training before starting work in these areas.	DWR	DWR	Prepare and provide cultural resources awareness and sensitivity training program. Document that all construction and field workers have received the training. Document that culturally affiliated California Native American Tribes have received a copy of the training in advance.	Before construction.
3.9 Tribal Cultural Resources (continued)	3.9-1 (continued)	**Mitigation Measure 3.9-1b (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If indigenous archaeological resources are encountered during project development or operation, all activity within 100 feet of the find shall cease and the find shall be	DWR	DWR	Verify that activity within 100 feet of indigenous archaeological resources found has ceased and the indigenous archaeological resource has been flagged. Document development and implementation	During construction.

Issue Area	Impact	Mitigation Measure	Responsibility for Implementing	Responsibility for Monitoring	Monitoring and Reporting Actions	Timing
		flagged for avoidance. DWR, in consultation with affiliated tribal parties, will develop and implement appropriate protection and avoidance measures, where feasible. Procedures will be developed in accordance with State CEQA Guidelines Section 15126.4, which specifies procedures for post-review discoveries. Treatment may include, as feasible, processing materials for reburial; minimizing handling of cultural objects; leaving objects in place within the landscape; returning objects to a location in the project area where they will not be subject to future impacts; avoidance; and treating with culturally appropriate dignity. "Avoidance" means that no activities associated with the project may affect the tribal cultural resources. "Treating with culturally appropriate dignity" means taking into account the tribal cultural values and meaning of the resource by implementing measures including, but not limited to, the following: • Protecting the cultural character and integrity of the resource • Protecting the traditional use of the resource • Protecting the confidentiality of the resource • Protecting the resource Construction work at the location of the find may begin upon authorization by DWR. Work may proceed in other parts of the project area while the mitigation is being carried out.			of appropriate protection and avoidance measures.	
3.9 Tribal Cultural Resources (continued)	3.9-1 (continued)	**Mitigation Measure 3.9-1c (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative):** If human remains are discovered during construction, all work shall immediately halt within 100 feet of the find and the Sutter County Coroner shall be contacted to evaluate the remains and follow the procedures and protocols set forth in State CEQA Guidelines Section 15064.5(e)(1). If the County Coroner determines that the remains are Native American, the County shall contact the NAHC, in accordance with Health and Safety Code Section 7050.5(c) and PRC Section 5097.98. As required by PRC Section 5097.98, DWR shall ensure that further development activity avoids damage or disturbance in the immediate vicinity of the Native American human remains, according to generally accepted cultural or archaeological standards or practices, until DWR has conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.	DWR	DWR	Verify that work has halted within 100 feet of human remains found and that Sutter County Coroner has been contacted. If the corner determines the remains are Native American, the coroner will contact the NAHC. Document communication with NAHC, who will identify the person or persons believed most likely to be descended from the deceased Native American.	During construction.
3.9 Tribal Cultural Resources (continued)	3.9-2: Implementation of the Proposed Project could contribute to significant direct or indirect cumulative changes in the significance of a tribal cultural resource, as defined in PRC Section 21074.	**Mitigation Measure (Proposed Project, South Notch Alternative, North and South Notches Alternative, North Notch with Modified Gate Operation Alternative, and Tisdale Weir Structural Improvements Alternative): Implement Mitigation Measures 3.9-1a through 3.9-1c.**	DWR	DWR	See above.	See above.

Attachments

Master Comment Response Attachments

Attachment A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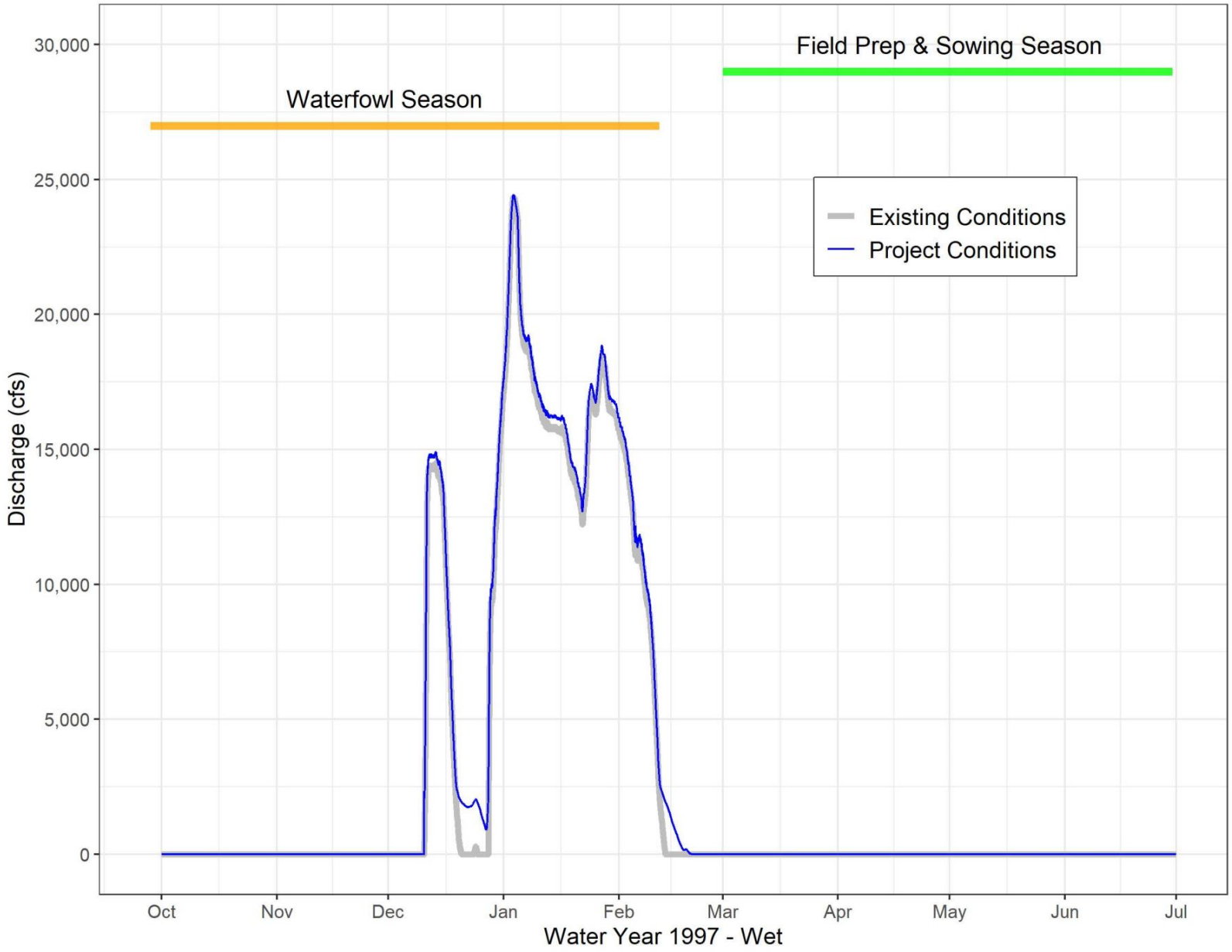
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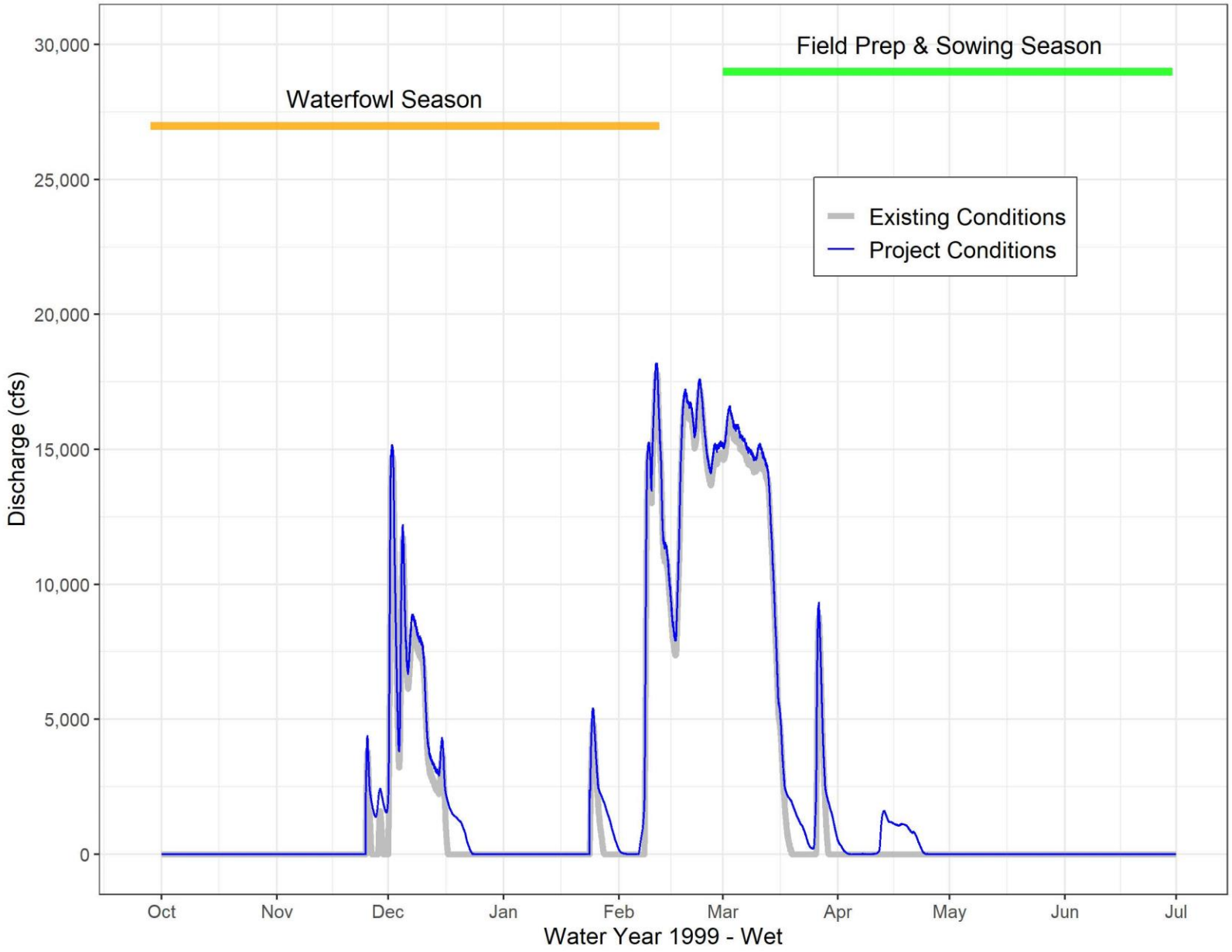
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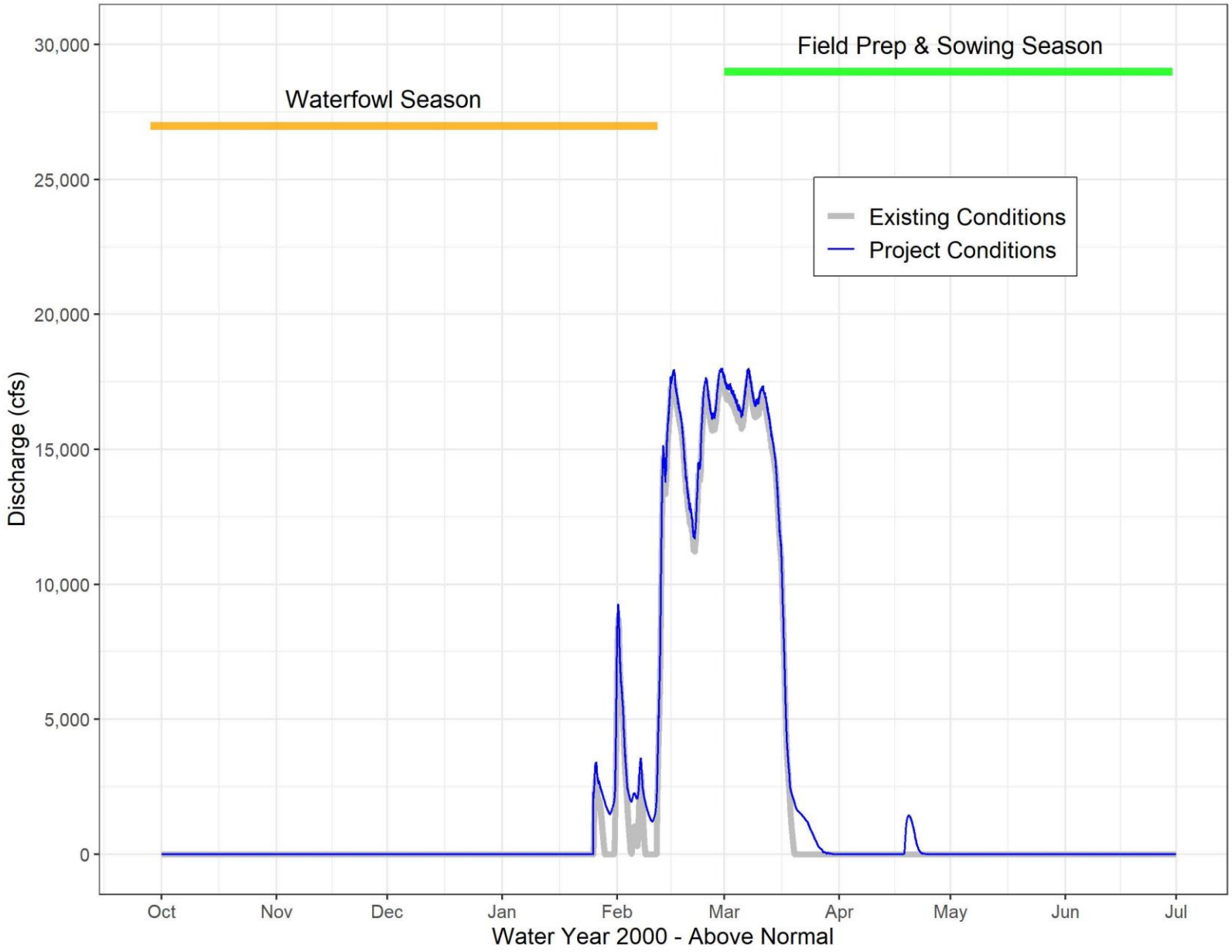
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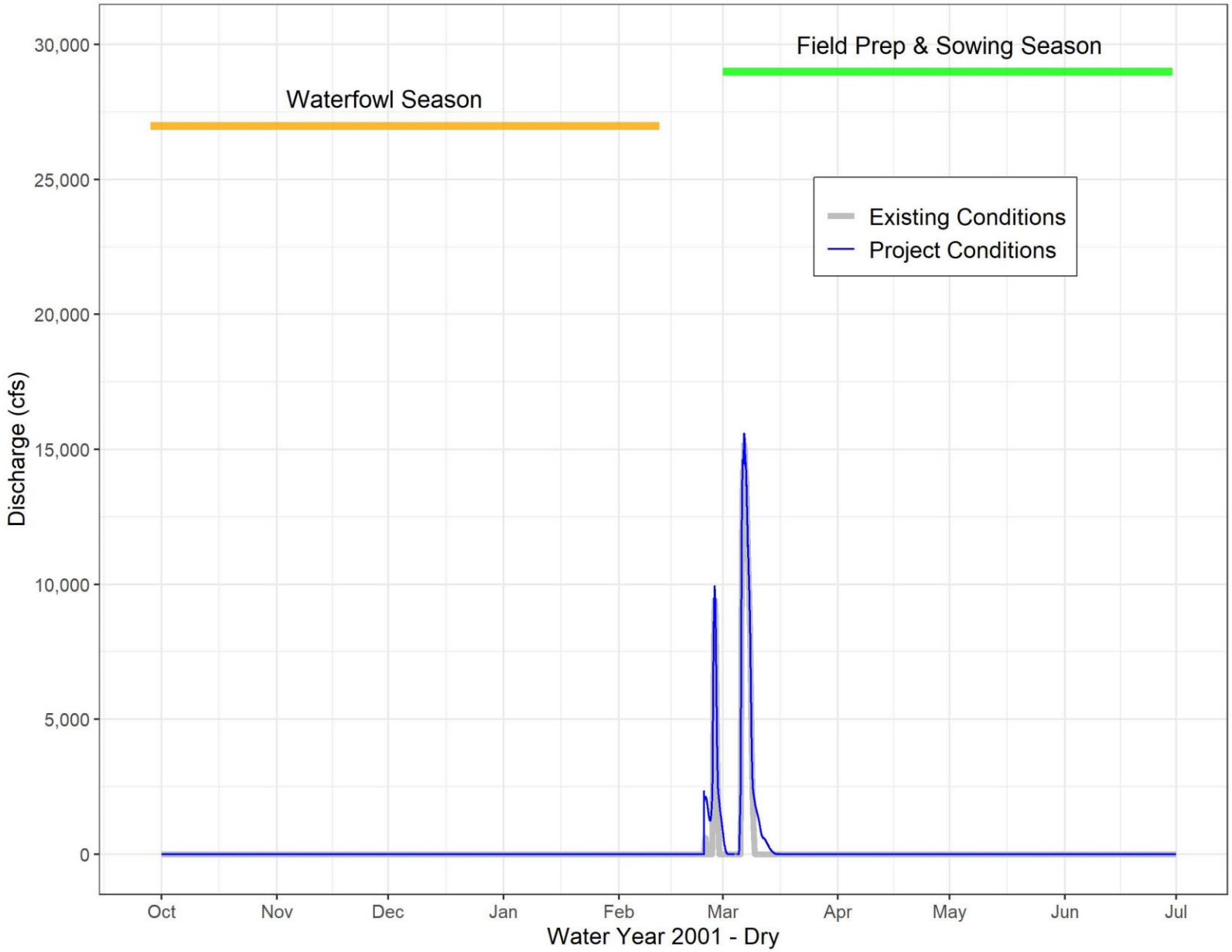
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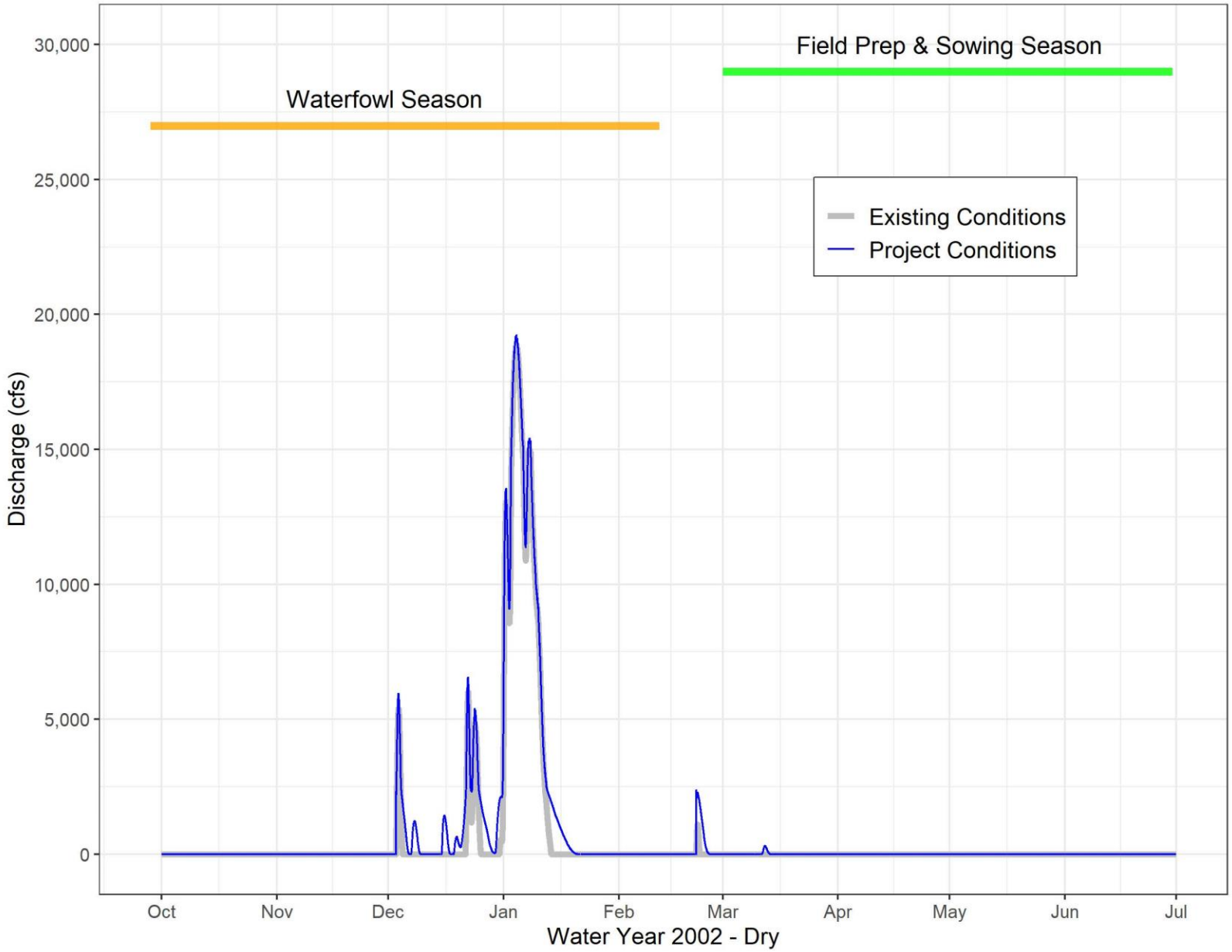
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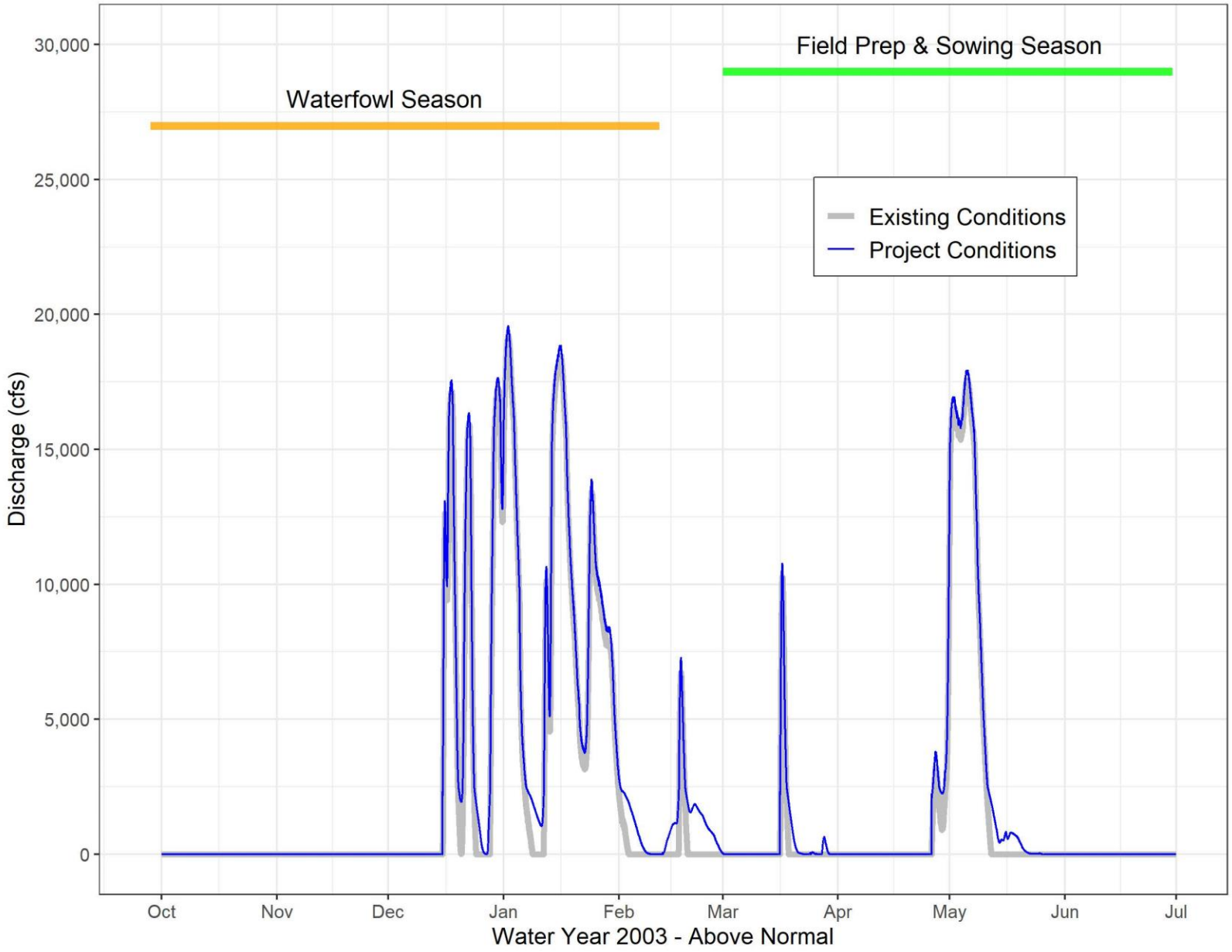
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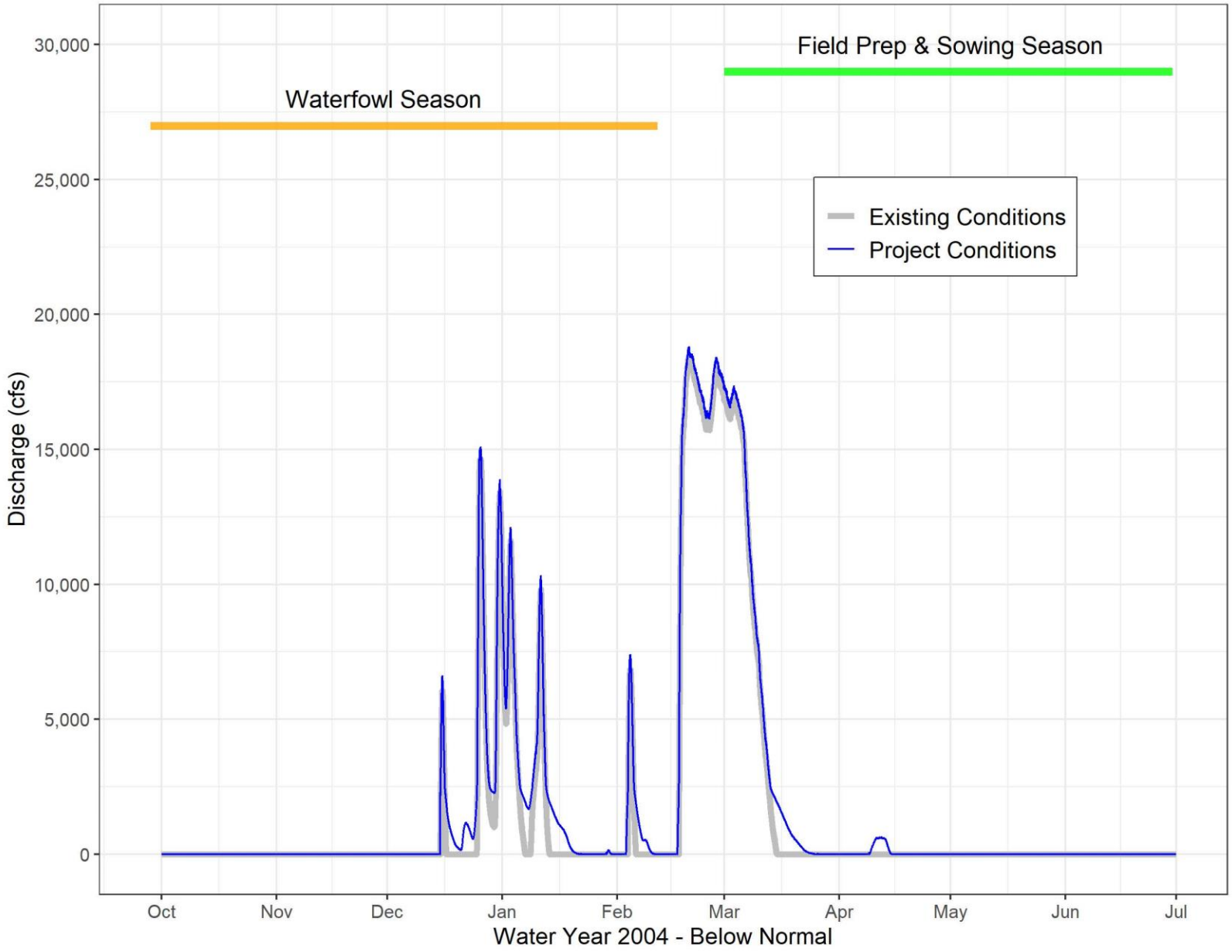
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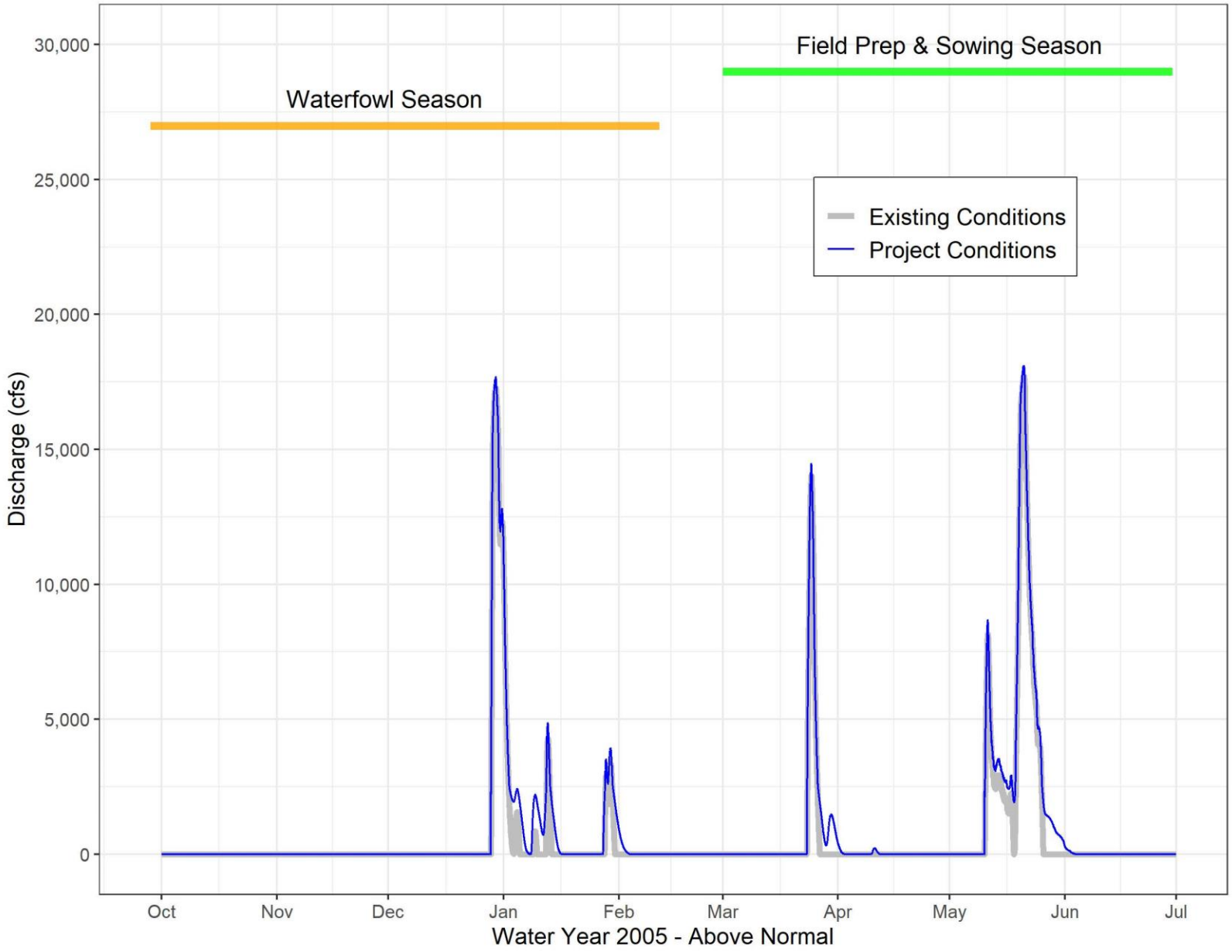
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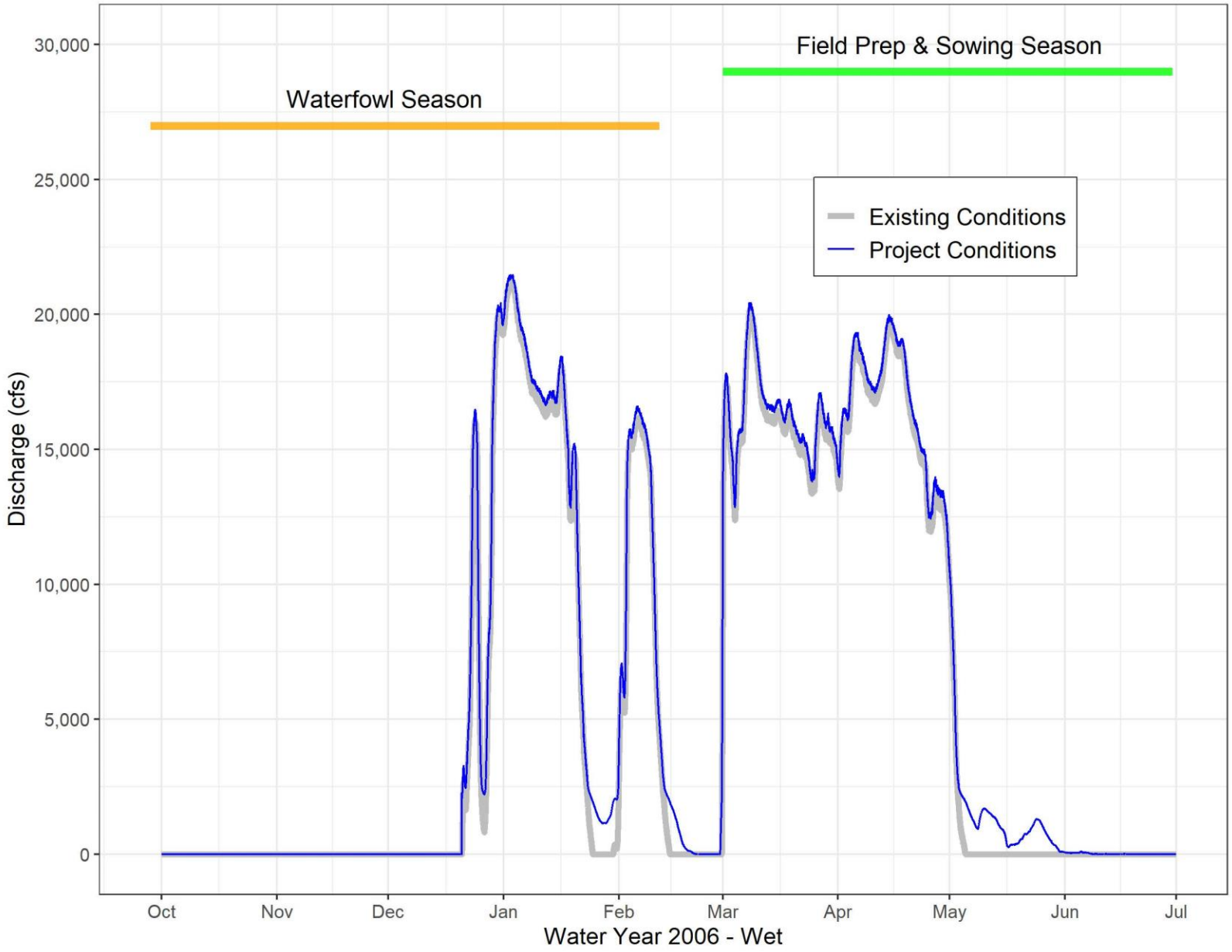
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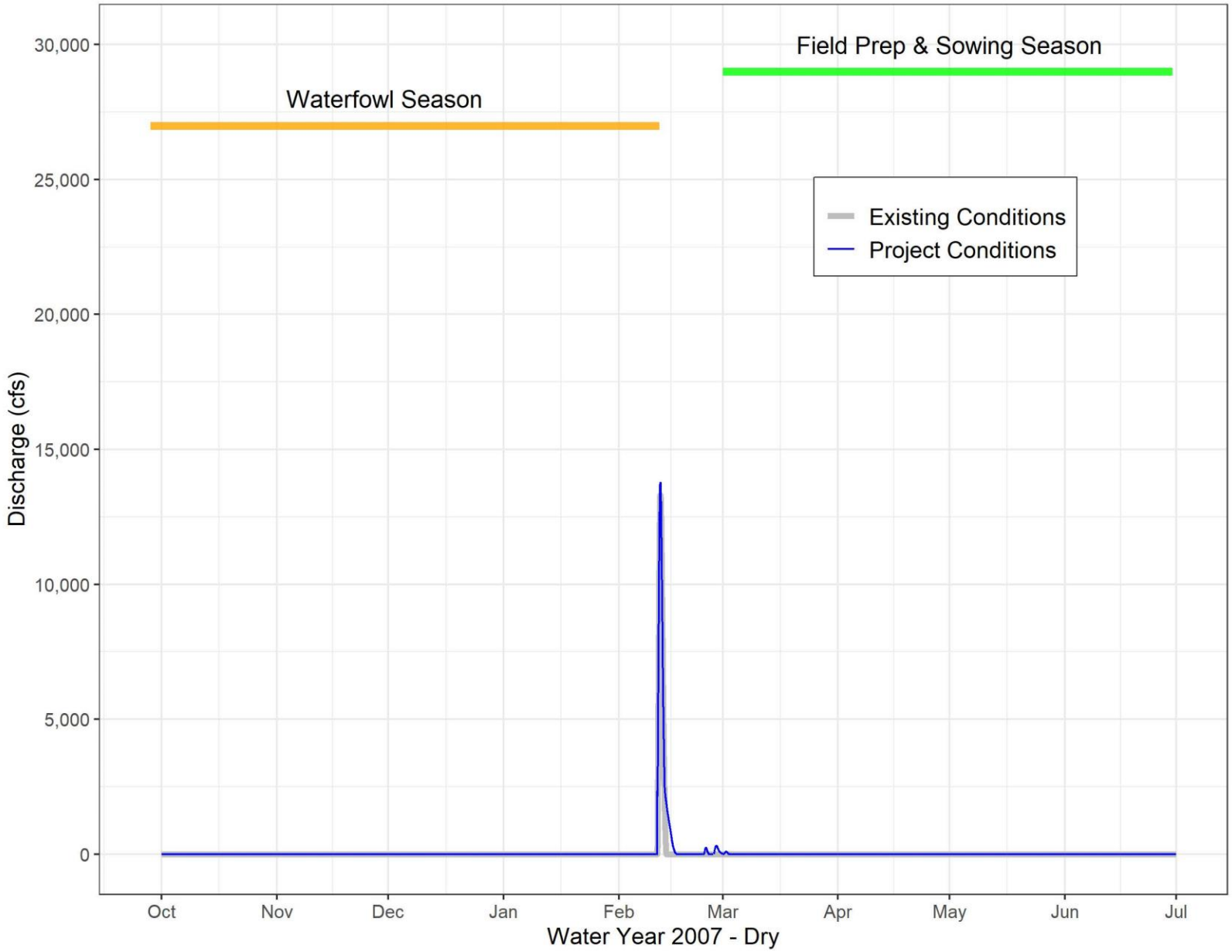
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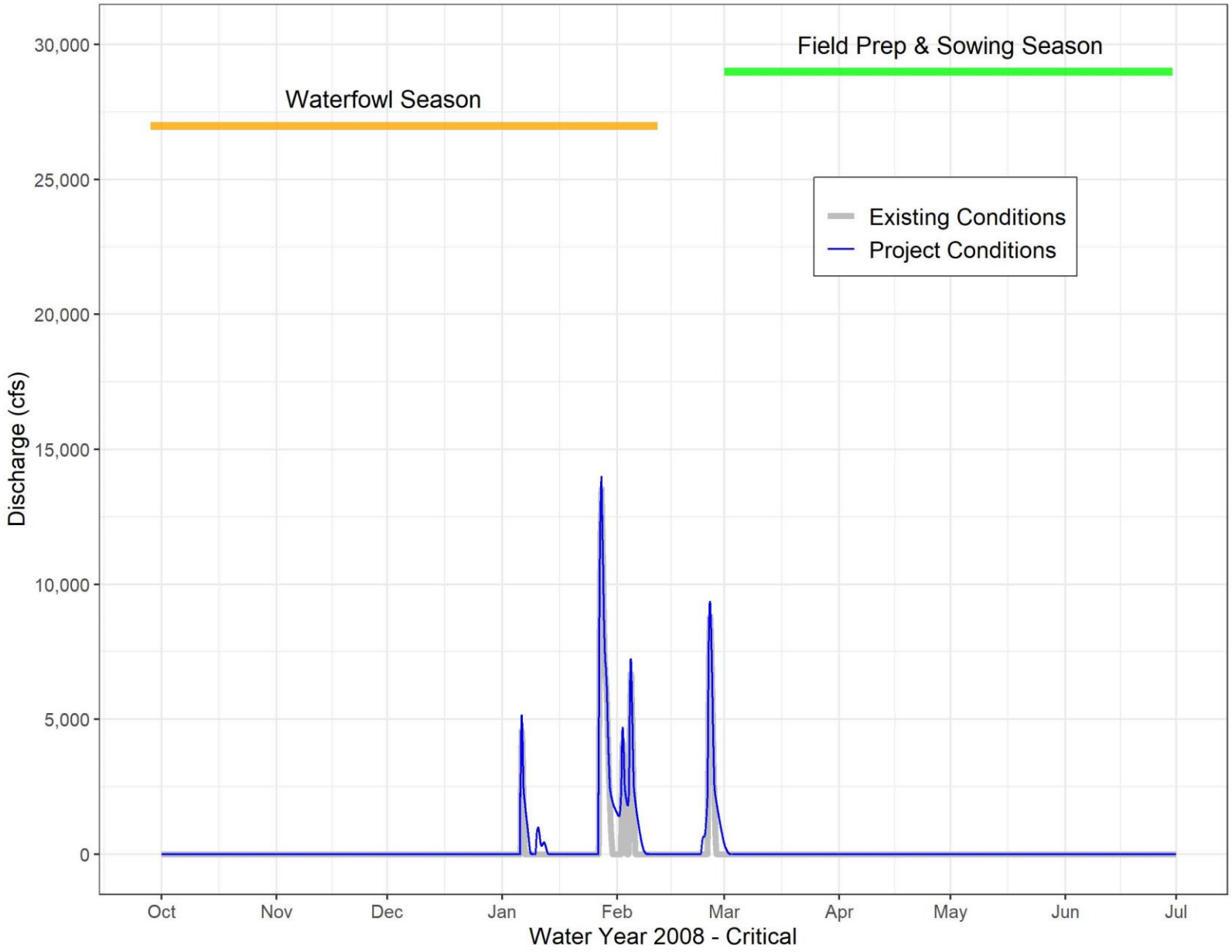
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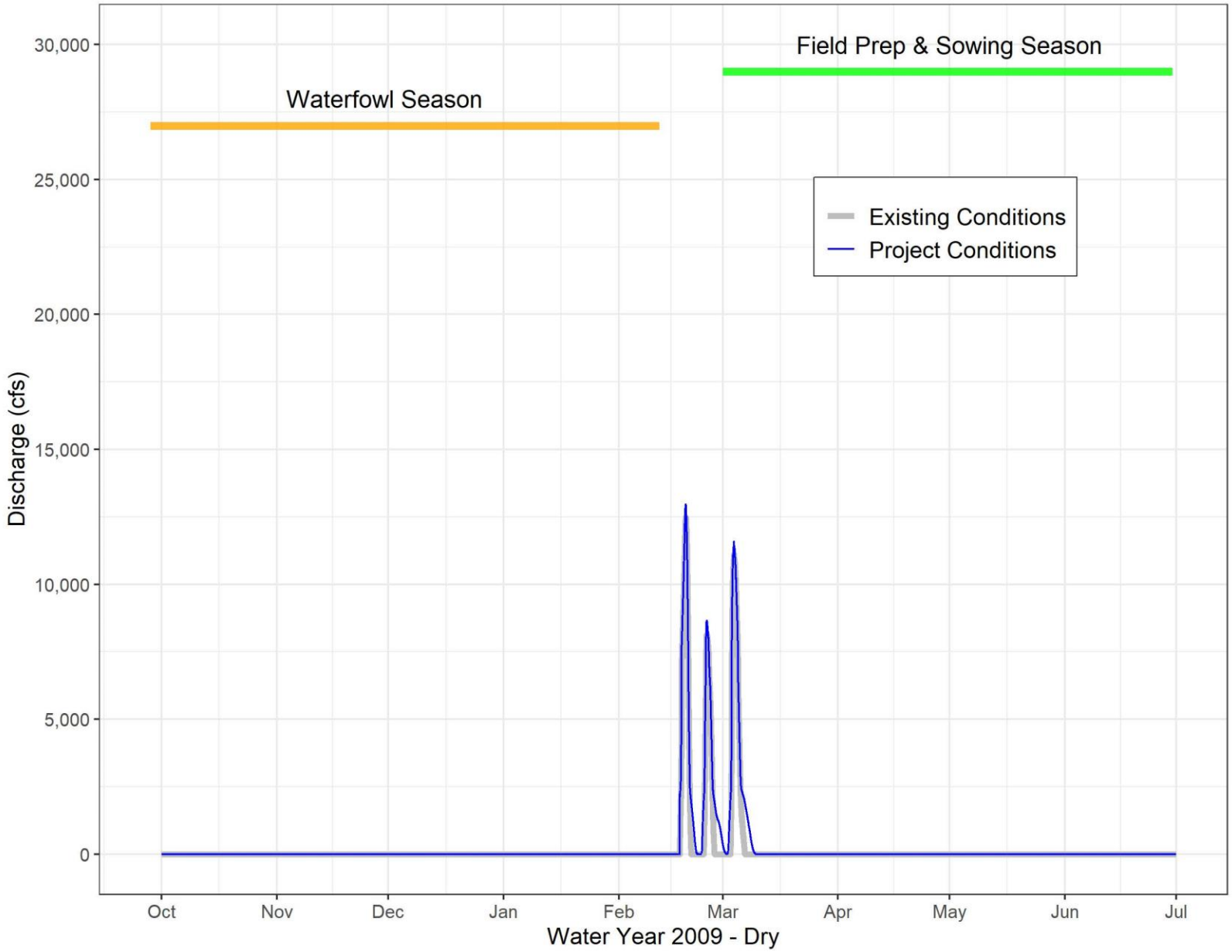
Water Year 2008 - Critical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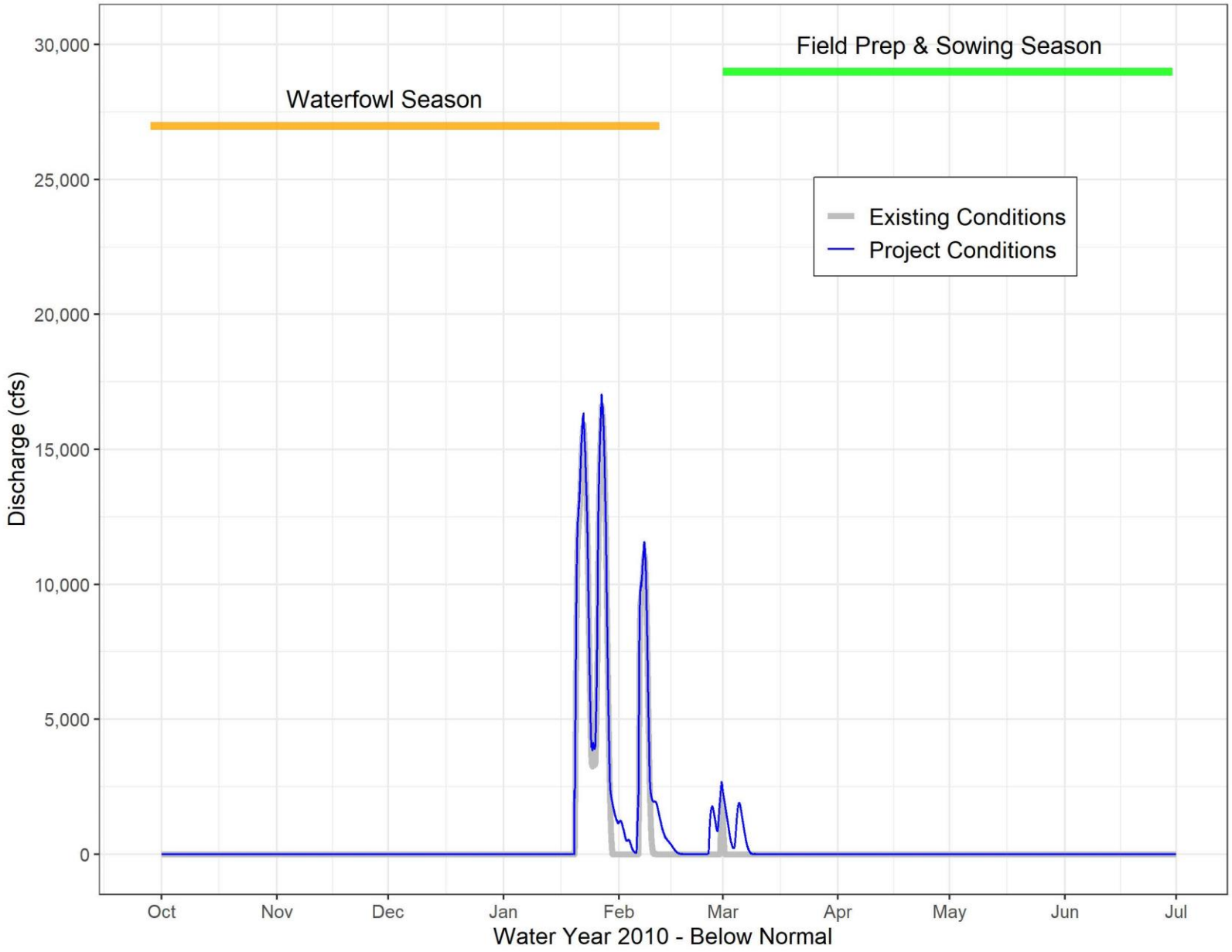
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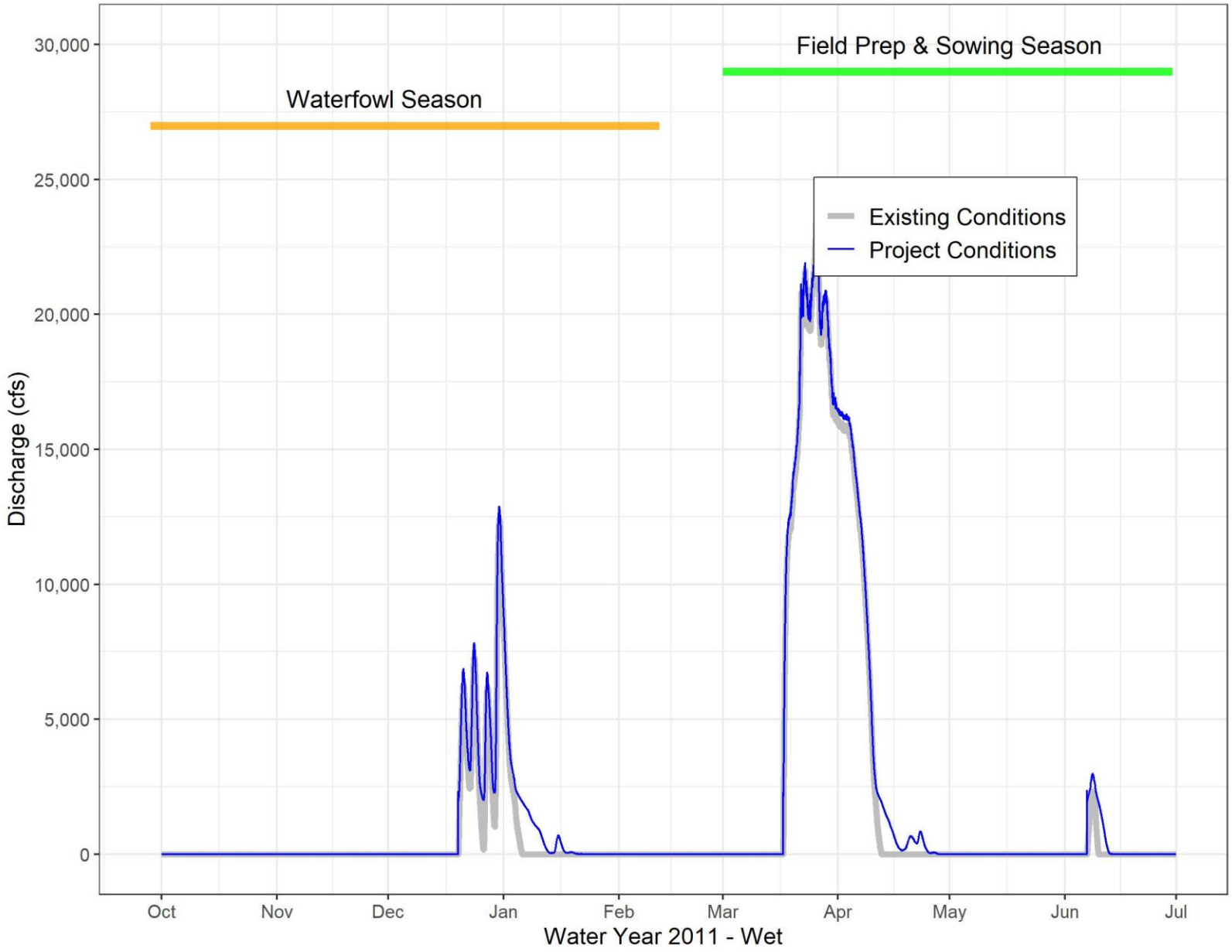
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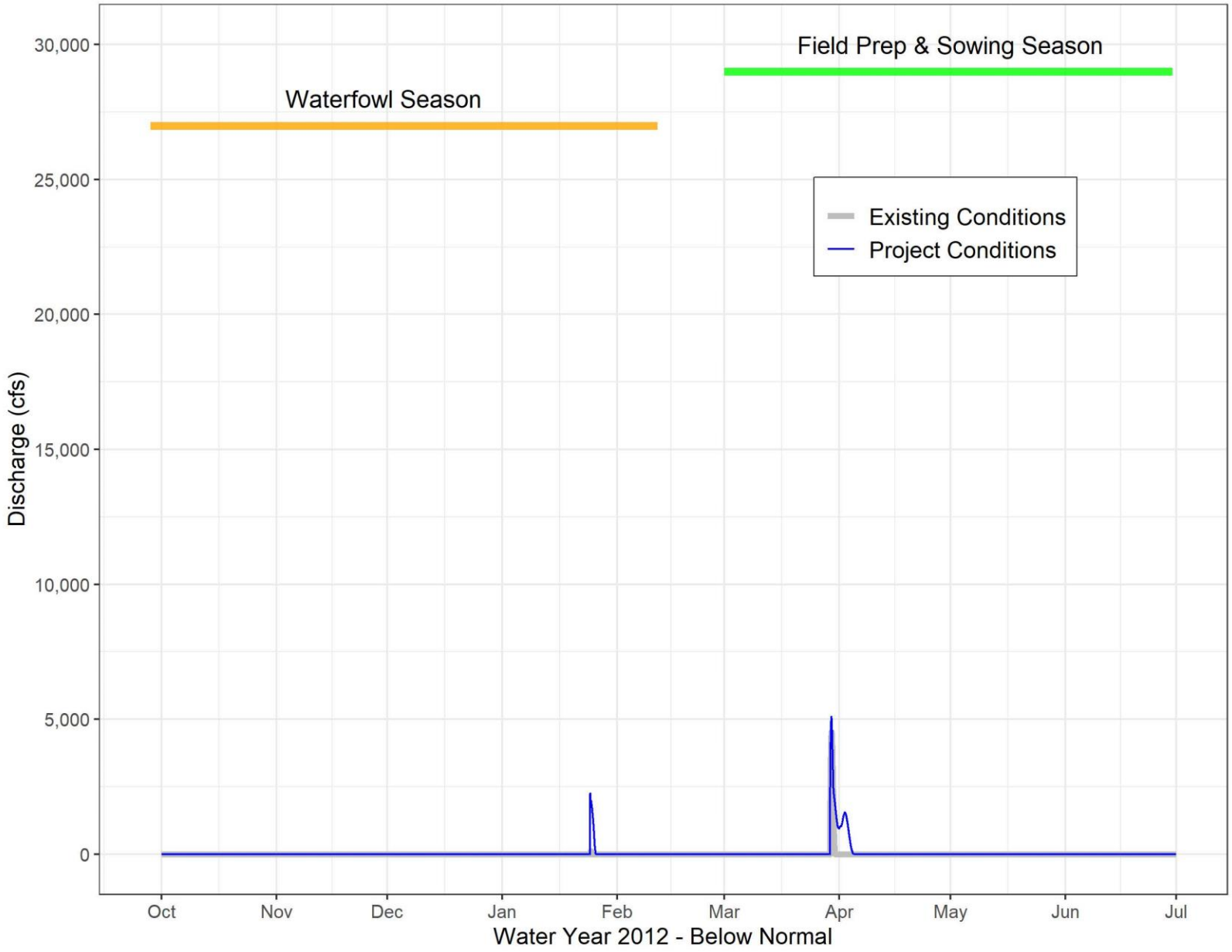
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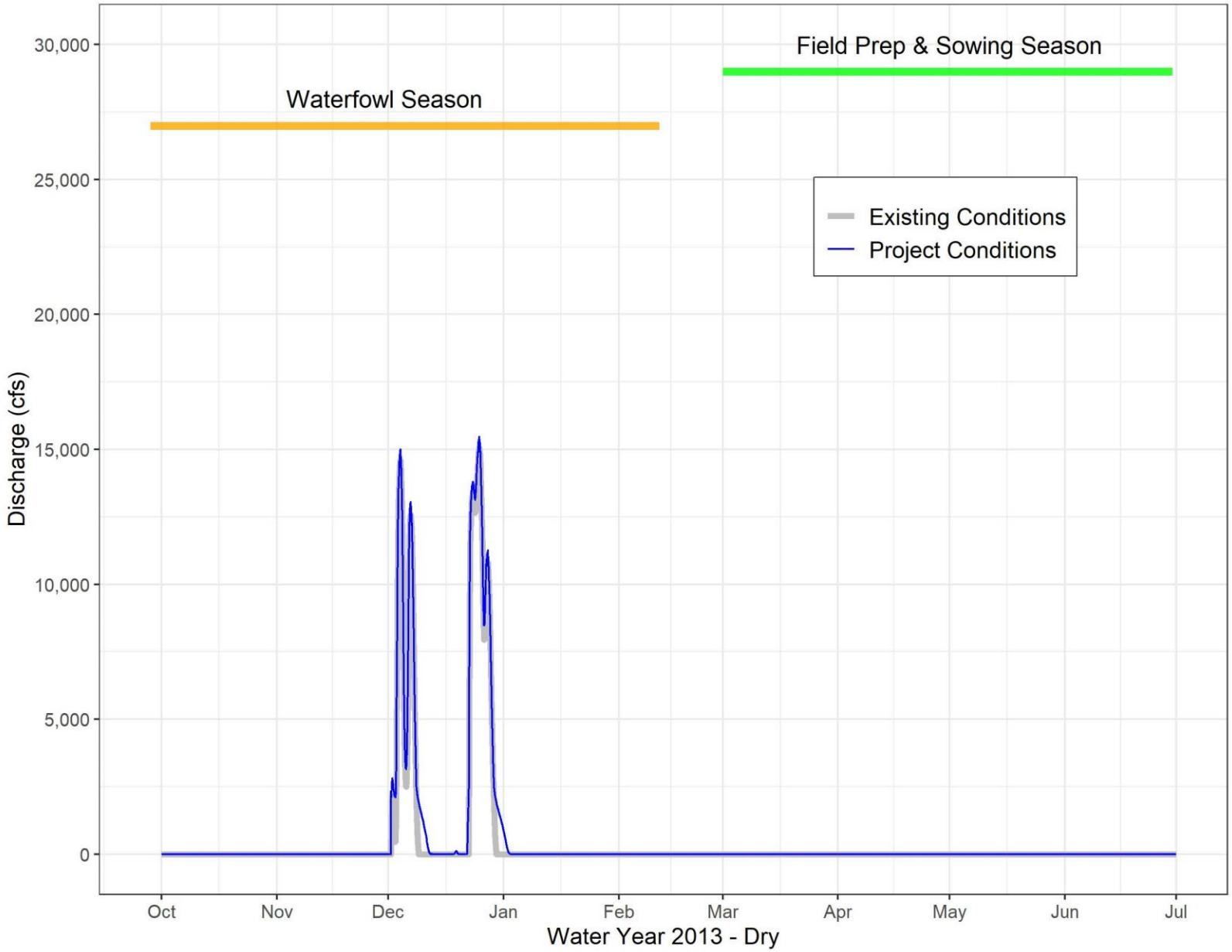
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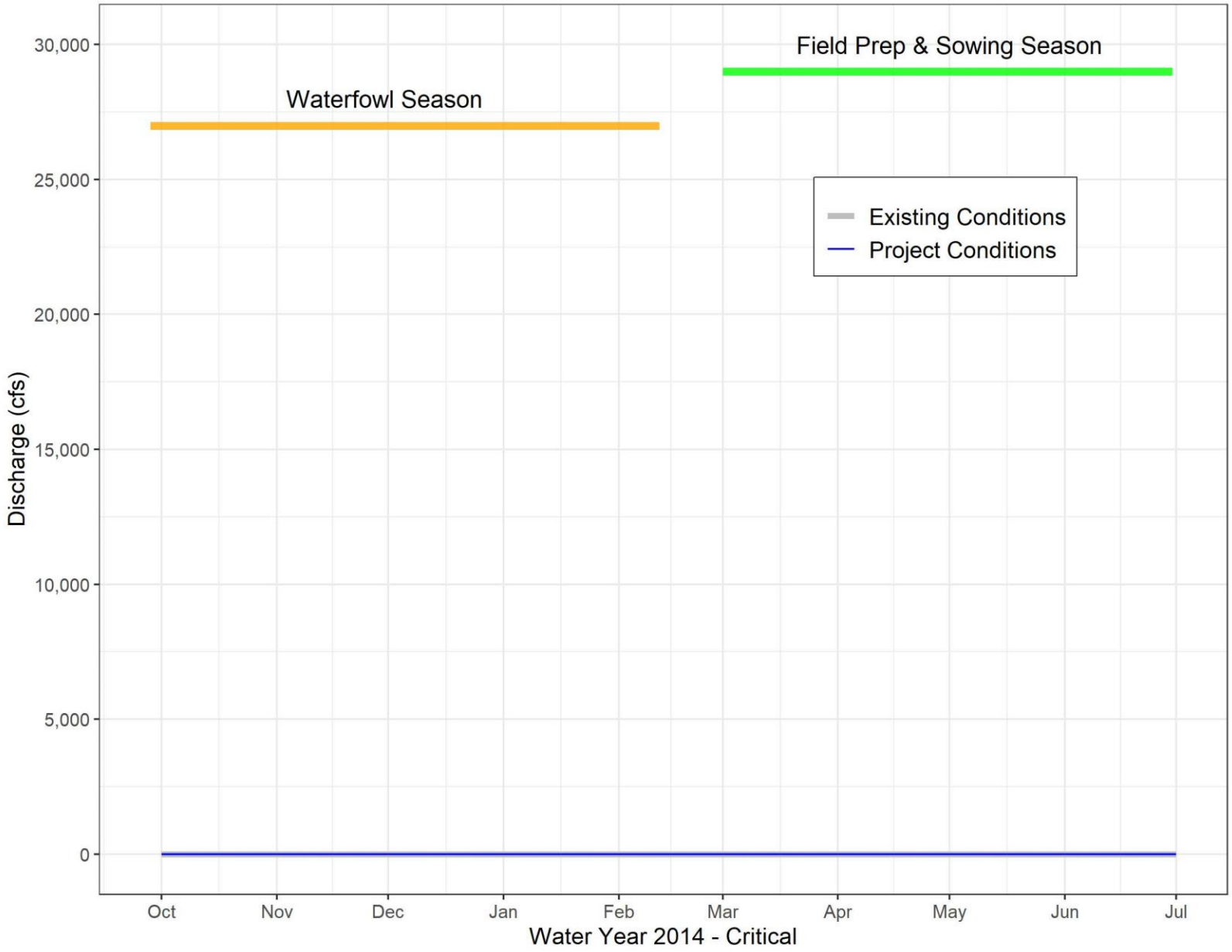
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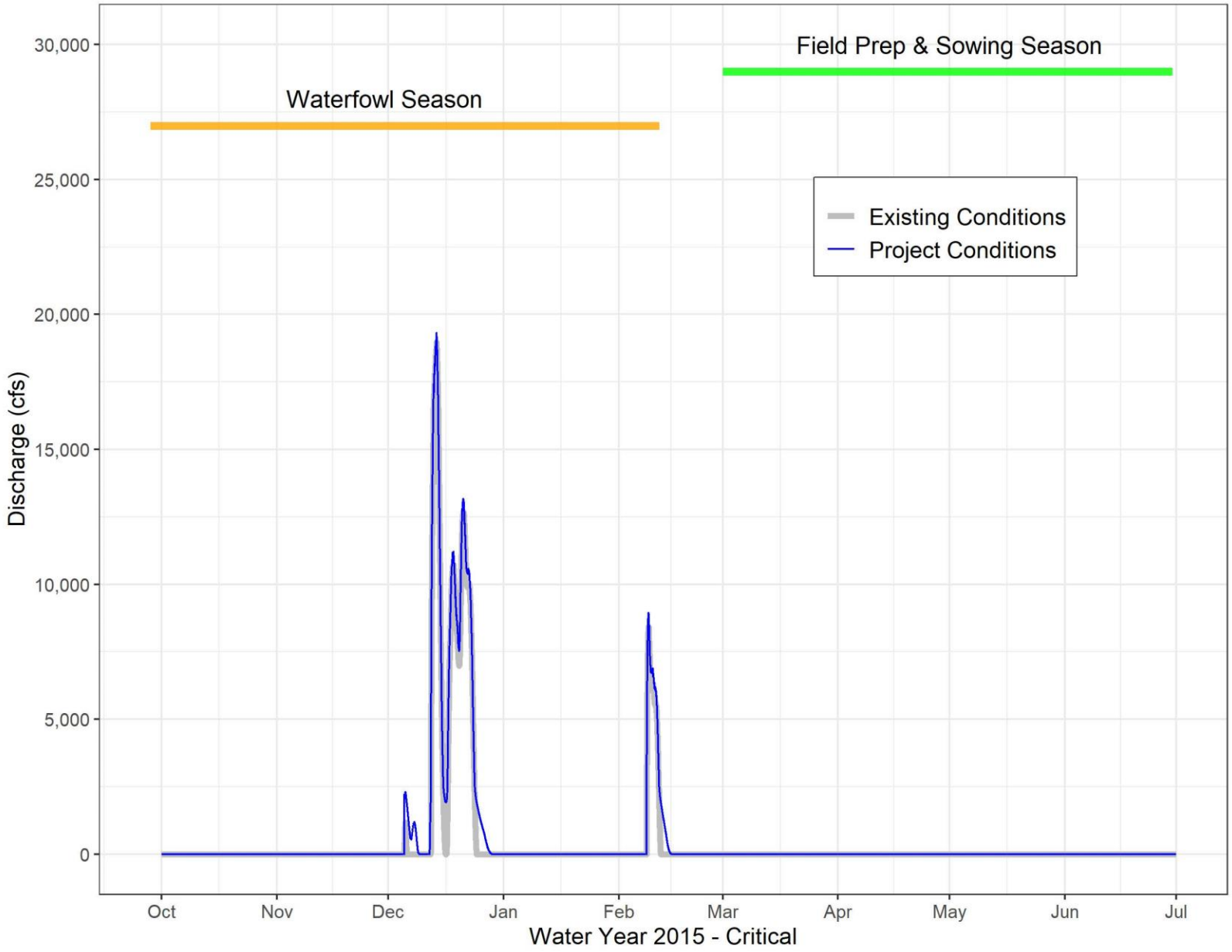
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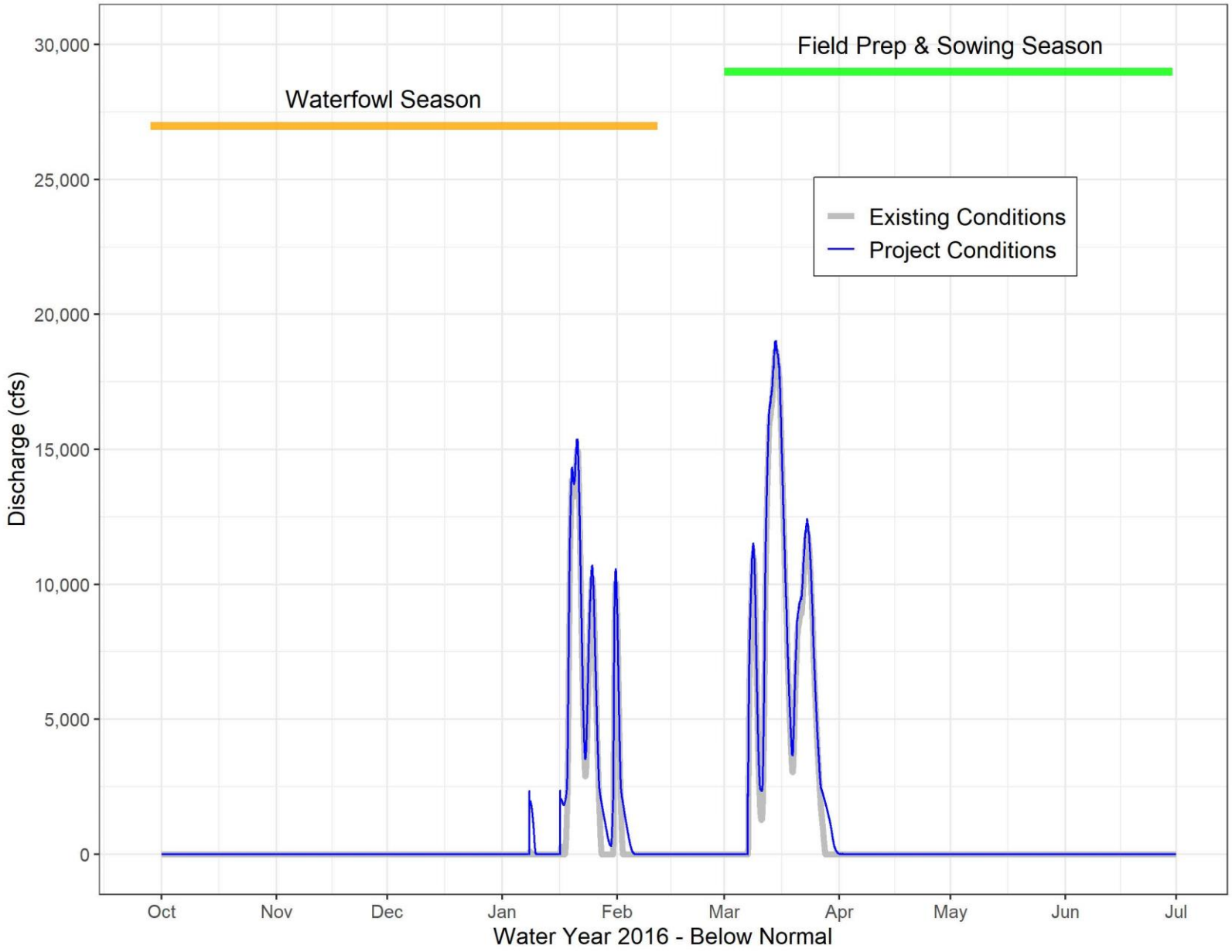
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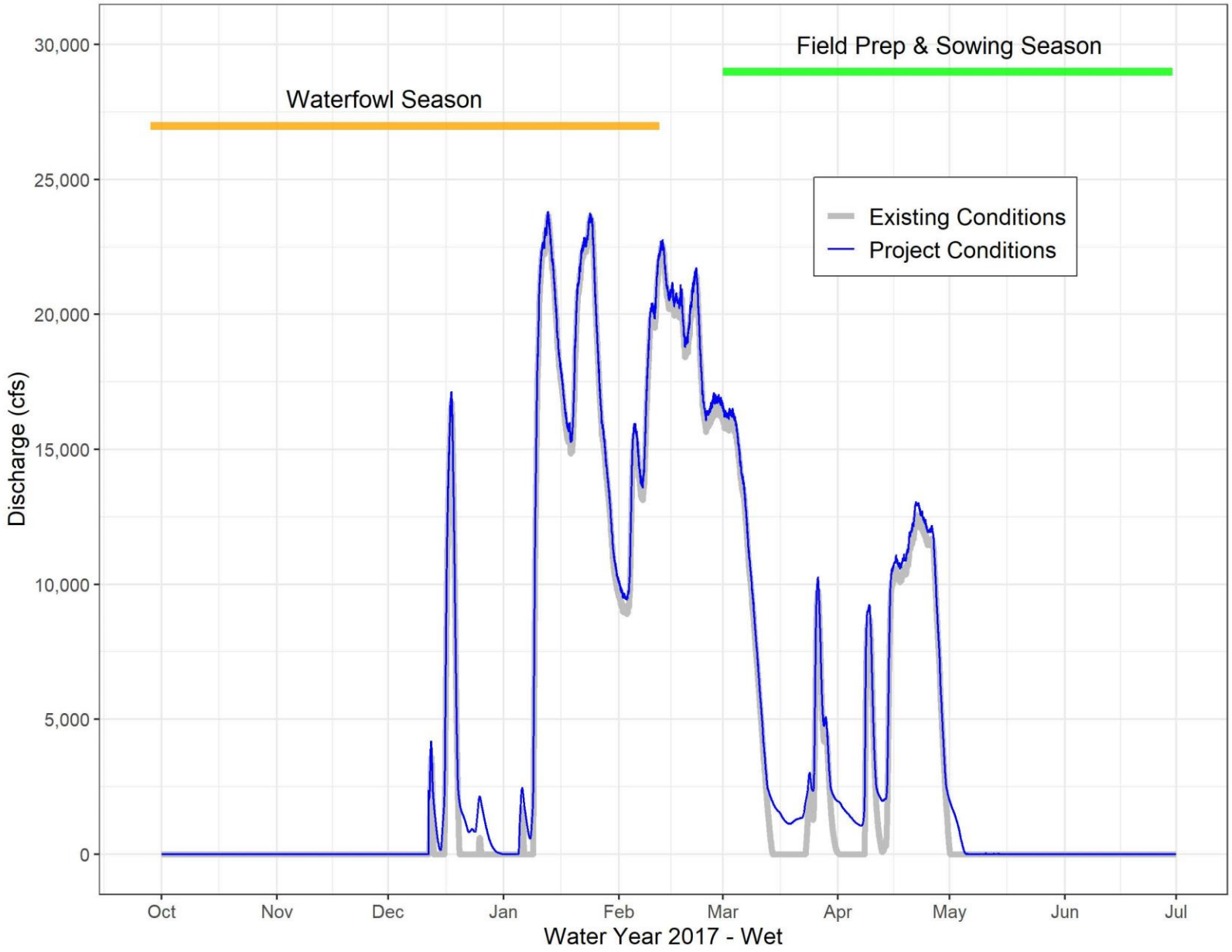
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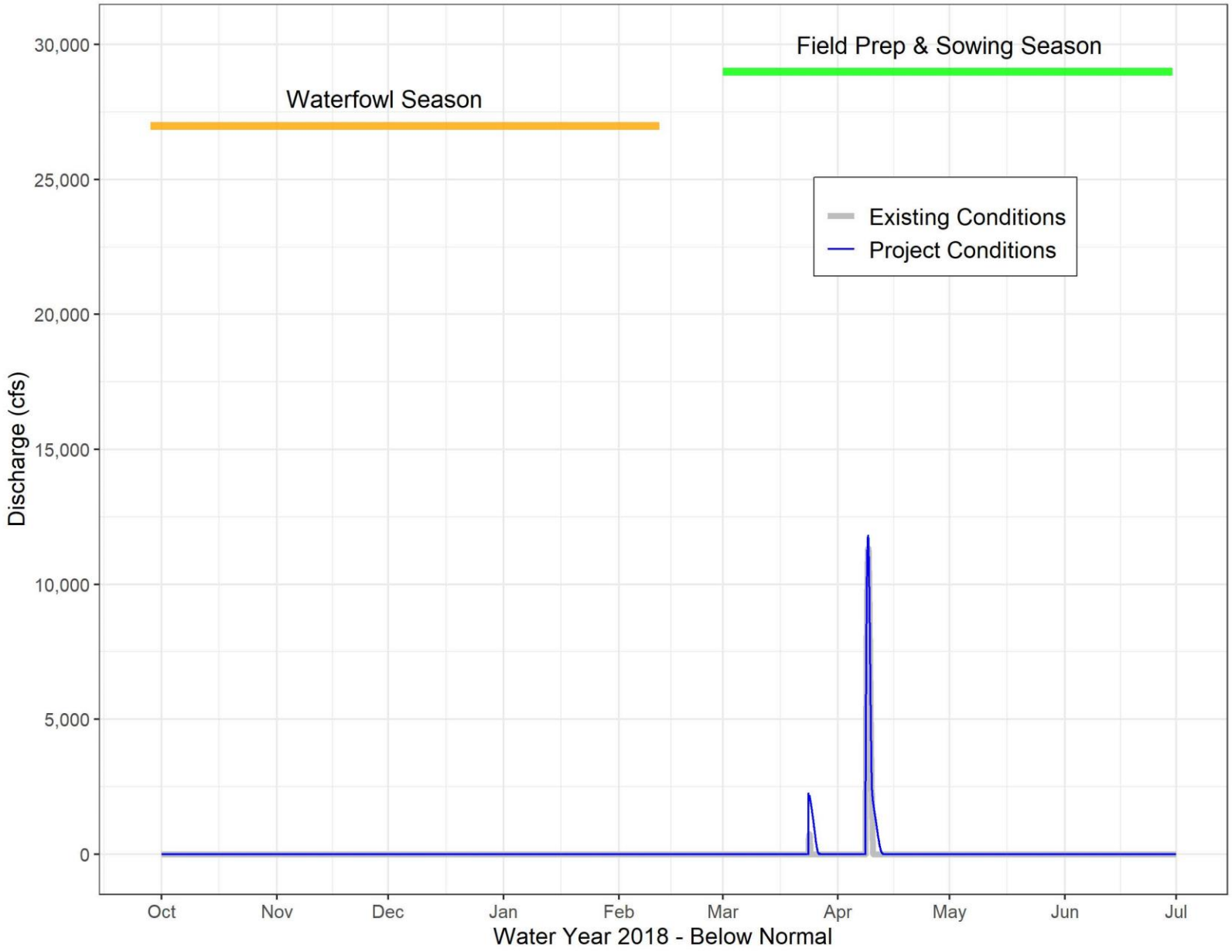
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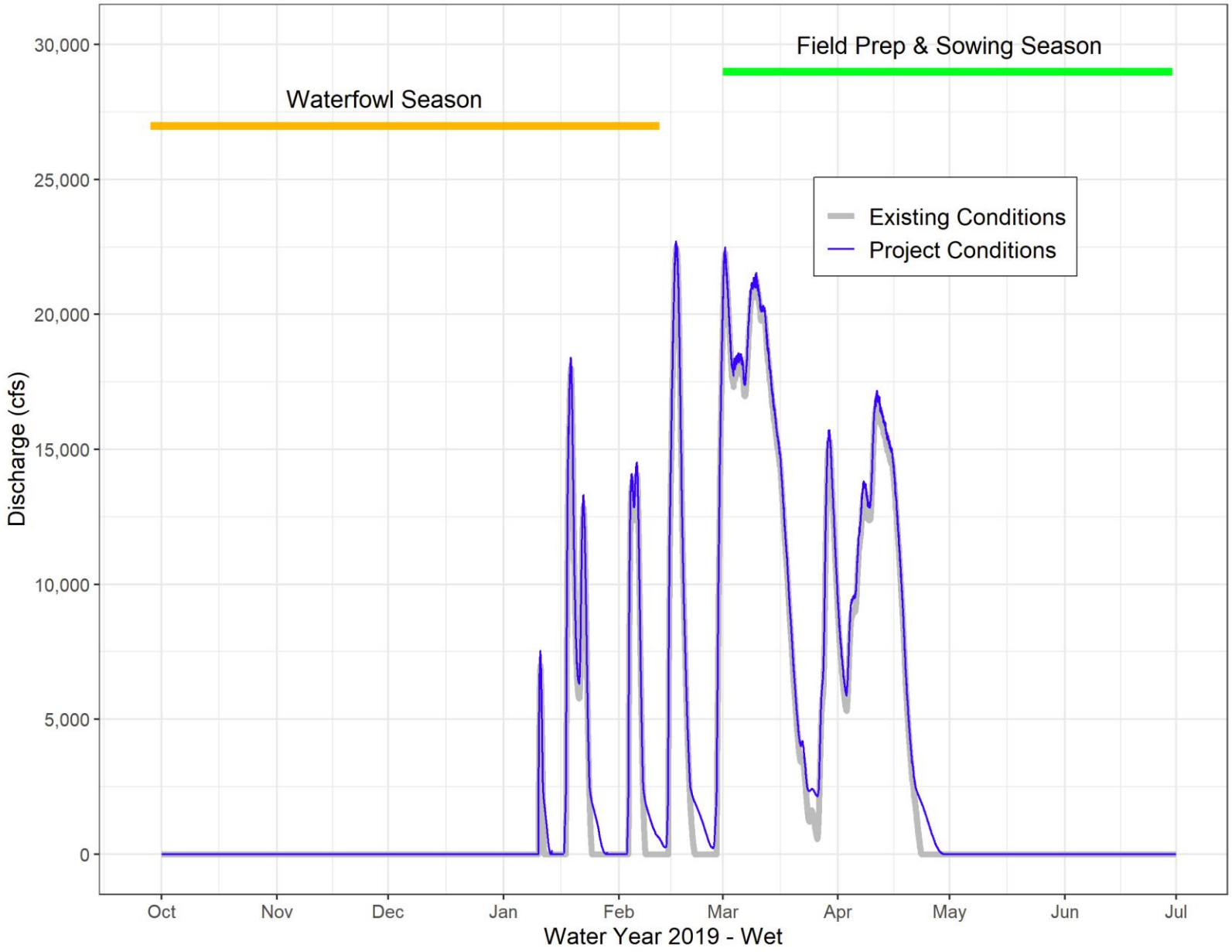
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Water Year 2019 - Wet

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Attachment B1

Field Prep Sowing Season Summary WYs 1997 - 2018

Majority Owner (by Area)	APN	Field ID	Change in Number of Wet Days (days)																					Avg. Change in Number of Wet Days (days)	Avg. Change in Number of Wet Days (days)				
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		Wet	Above Normal	Below Normal	Dry	Critical
Majority Owner (by Area)																														
CREPS REV '05 TR ETAL	21-240-031	0	-	-	4	3	1	-	-	2	-	-	-	1	0	3	7	0	-	-	-	1	-	1	2.1	5.5	3.0	1.4	0.5	1.0
CREPS REV '05 TR ETAL	21-240-031	1	1	-	1	2	0	-	-	3	-	-	0	0	0	13	16	1	-	-	-	1	-	1	3.0	6.0	2.0	3.8	0.0	0.0
CREPS REV '05 TR ETAL	21-240-029	2	1	-	1	2	1	-	-	3	-	-	1	1	0	12	18	0	-	-	-	1	-	1	3.2	6.7	2.0	3.4	0.7	1.0
CREPS REV '05 TR ETAL	21-240-029	3	-	-	4	1	0	-	-	2	-	-	-	1	0	-	6	1	-	-	-	2	-	4	2.1	5.0	1.0	2.3	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	4	-	-	2	3	1	-	-	2	-	-	-	0	0	-	1	2	-	-	-	1	-	1	1.3	1.5	3.0	1.5	0.5	0.0
CREPS REV '05 TR ETAL	21-240-016	5	1	-	1	3	0	-	-	2	-	-	0	1	0	12	18	1	-	-	-	1	-	0	3.1	6.7	3.0	3.2	0.0	1.0
CREPS REV '05 TR ETAL	21-240-028	6	-	-	3	2	0	-	-	2	-	-	-	1	0	-	6	1	-	-	-	2	-	0	1.7	4.5	2.0	1.3	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	7	1	-	1	2	1	-	-	2	-	-	0	1	0	1	-	10	-	-	1	1	-	-	1.8	1.0	2.0	3.5	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	8	1	-	1	3	1	-	-	2	-	-	0	1	0	1	-	27	-	-	1	2	-	-	3.3	1.0	3.0	8.0	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	9	1	-	1	3	0	-	-	2	-	-	0	1	0	1	9	10	-	-	1	2	-	1	2.3	3.7	3.0	3.2	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	10	1	-	1	4	1	-	-	3	-	-	0	2	0	5	-	8	-	-	1	1	-	-	2.3	1.0	4.0	4.3	0.3	1.5
CREPS REV '05 TR ETAL	21-240-016	11	1	-	1	3	0	-	-	2	-	-	0	1	0	2	-	10	-	-	1	1	-	-	1.8	1.0	3.0	3.8	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	12	1	-	2	2	0	-	-	3	-	-	0	1	1	2	-	-	-	-	1	2	-	-	1.4	1.5	2.0	2.3	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	13	1	-	1	3	1	-	-	3	-	-	0	1	0	1	2	-	-	-	2	1	-	0	1.2	1.3	3.0	1.3	0.3	1.5
CREPS REV '05 TR ETAL	21-240-016	14	1	-	2	3	1	-	-	3	-	-	0	1	1	14	-	-	-	-	1	3	-	-	2.7	1.5	3.0	6.7	0.7	1.0
CREPS REV '05 TR ETAL	24-080-007	15	1	-	1	3	0	-	-	3	-	-	1	2	0	3	-	-	-	-	1	2	-	-	1.5	1.0	3.0	2.7	0.3	1.5
CREPS REV '05 TR ETAL	24-080-007	16	2	-	-	-	1	-	-	3	-	-	0	-	0	2	-	-	-	-	1	-	-	-	1.3	2.0	-	2.5	0.3	1.0
CREPS REV '05 TR ETAL	24-080-007	17	1	-	-	3	1	-	-	2	-	-	0	-	0	14	-	18	-	-	2	2	-	-	4.3	1.0	3.0	9.0	0.3	2.0
CREPS REV '05 TR ETAL	21-240-016	18	1	-	1	4	2	-	-	3	-	-	0	1	0	2	-	-	-	-	1	1	-	-	1.5	1.0	4.0	2.0	0.7	1.0
CREPS REV '05 TR ETAL	24-070-001	19	3	-	2	3	1	-	-	3	-	-	1	1	1	14	-	4	-	-	2	2	-	-	3.1	2.5	3.0	5.8	1.0	1.5
CREPS REV '05 TR ETAL	24-070-001	20	1	-	2	3	1	-	-	3	-	-	0	2	0	17	-	4	-	-	1	2	-	-	3.0	1.5	3.0	6.5	0.3	1.5
CREPS REV '05 TR ETAL	24-080-007	21	1	-	2	2	0	-	-	3	-	-	1	1	0	16	-	4	-	-	1	1	-	-	2.7	1.5	2.0	6.0	0.3	1.0
CREPS REV '05 TR ETAL	24-070-001	22	1	-	2	3	1	-	-	3	-	-	0	1	0	17	-	3	-	-	1	2	-	-	2.8	1.5	3.0	6.3	0.3	1.0
CREPS REV '05 TR ETAL	24-070-001	23	0	-	1	0	0	-	-	1	-	-	-	0	0	0	-	0	-	1	-	1	-	0	0.3	0.5	0.0	0.4	0.0	0.5
TJ HOLDINGS LP	24-120-001	24	0	-	1	0	0	-	-	0	-	-	-	0	0	0	-	2	-	1	-	1	-	0	0.4	0.5	0.0	0.6	0.0	0.5
TJ HOLDINGS LP	24-120-017	25	-	-	5	2	0	-	-	3	-	-	-	1	0	5	-	3	-	-	-	1	-	2	2.2	5.0	2.0	2.8	0.0	1.0
TJ HOLDINGS LP	24-120-017	26	-	-	1	1	1	-	-	3	-	-	-	1	0	10	-	4	-	-	-	1	-	1	2.3	1.0	1.0	3.8	0.5	1.0
TJ HOLDINGS LP	24-130-029	27	0	-	2	1	1	-	-	3	-	-	0	2	0	18	-	24	-	-	1	1	-	-	4.4	1.0	1.0	11.5	0.3	1.5
TJ HOLDINGS LP	24-130-029	28	0	-	1	2	0	-	-	3	-	-	0	1	0	17	20	18	-	-	1	2	-	1	4.7	7.0	2.0	8.2	0.0	1.0
TJ HOLDINGS LP	24-130-023	29	1	-	2	2	1	-	-	3	-	-	0	1	0	17	-	23	-	-	1	2	-	-	4.4	1.5	2.0	11.3	0.3	1.0
DE WIT FARMS INC	24-130-030	30	1	-	1	2	1	-	-	2	-	-	0	1	0	16	-	6	-	-	1	1	-	-	2.7	1.0	2.0	6.3	0.3	1.0
DE WIT FARMS LLC	25-130-049	31	2	-	1	1	1	-	-	2	-	-	1	1	1	18	-	24	-	-	1	2	-	-	4.6	1.5	1.0	11.5	1.0	1.0
DNH FARMS GP	25-130-035	32	1	-	1	1	1	-	-	2	-	-	1	0	0	17	-	14	-	-	0	2	-	-	3.3	1.0	1.0	8.8	0.7	0.0
DNH FARMS GP	25-130-035	33	1	-	1	1	0	-	-	2	-	-	0	1	0	15	-	18	-	-	1	2	-	-	3.5	1.0	1.0	9.3	0.0	1.0
DNH FARMS GP	25-130-019	34	1	-	1	3	1	-	-	3	-	-	1	0	0	1	2	-	-	-	1	1	-	9	1.8	1.3	3.0	3.5	0.7	0.5
DNH FARMS GP	25-130-019	35	1	-	1	3	1	-	-	2	-	-	1	1	0	1	6	-	-	-	1	2	-	-	1.7	2.7	3.0	1.7	0.7	1.0
DNH FARMS GP	25-200-030	36	1	-	2	3	0	-	-	3	-	-	0	1	0	14	21	-	-	-	1	1	-	0	3.6	8.0	3.0	4.5	0.0	1.0
NORDIC INDUSTRIES INC/ ETAL	25-200-043	37	1	-	1	2	1	-	-	2	-	-	1	0	0	0	1	-	-	-	-	1	-	7	1.4	1.0	2.0	2.5	0.7	0.0
NORDIC INDUSTRIES INC/ ETAL	25-200-043	38	0	-	1	3	0	-	-	2	-	-	1	1	1	2	2	-	-	-	1	1	-	-	1.3	1.0	3.0	1.7	0.7	1.0
NORDIC INDUSTRIES INC/ ETAL	25-200-043	39	-	-	2	3	1	-	-	2	-	-	-	1	0	-	1	-	-	-	-	1	-	1	1.3	1.5	3.0	1.3	0.5	1.0
NORDIC INDUSTRIES INC/ ETAL	29-210-024	40	1	-	0	1	0	-	-	1	-	-	1	9	0	-	0	-	-	-	-	0	-	0	1.2	0.3	1.0	0.3	0.3	9.0
NORDIC INDUSTRIES INC/ ETAL	29-210-023	41	-	-	2	2	1	-	-	1	-	-	-	-	0	-	1	-	-	-	-	1	-	0	1.0	1.5	2.0	0.7	0.5	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	42	-	-	2	0	1	-	-	1	-	-	-	-	2	-	1	-	-	-	-	0	-	0	0.9	1.5	0.0	0.3	1.5	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	43	-	-	2	0	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	0	0	-	0.3	0.5	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	44	-	-	3	2	1	-	-	2	-	-	-	0	0	-	1	-	-	-	-	1	-	0	1.1	2.0	2.0	1.0	0.5	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	45	-	0	-	0	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	-	1	-	0.2	0.3	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-008	46	-	-	0	0	-	-	-	0	-	1	-	-	-	-	0	-	-	-	-	0	0	-	0.1	0.3	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-008	47	-	-	1	1	0	-	-	2	-	-	-	1	0	9	-	7	-	-	-	1	-	0	2.2	1.0	1.0	3.8	0.0	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-230-007	48	0	-	1	0	0	-	-	2	-	-	-	0	0	6	-	4	-	-	-	1	-	0	1.3	0.5	0.0	2.6	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-230-007	49	-	-	1	0	1	-	-	1	-	-	-	0	0	6	-	2	-	0	-	1	-	0	1.1	1.0	0.0	2.0	0.5	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	50	-	-	2	1	1	-	-	2	-	-	-	1	0	8	-	5	-	-	-	0	-	0	2.0	2.0	1.0	3.0	0.5	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	51	-	-	0	0	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	52	-	-	0	0	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	53	-	-	1	1	0	-	-	2	-	-	-	1	0	11	-	9	-	-	-	1	-	0	2.6	1.0	1.0	4.6	0.0	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	54	0	-	12	4	0	-	-	1	-	-	0	0	0	1	-	1	-	0	-	0	-	0	1.5	6.0	4.0	0.6	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-006	55	0	-	3	2	1	0	-	4	-	-	-	1	0	-	-	1	-	-	-	0	-	0	1.1	1.5	2.0	1.3	0.3	1.0

Majority Owner (by Area)	APN	Field ID	Change in Number of Wet Days (days)																						Avg. Change in Number of Wet Days (days)	Avg. Change in Number of Wet Days (days)				
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		Wet	Above Normal	Below Normal	Dry	Critical
GOOSE CLUB FARMS NORTH LLC ET	29-250-006	56	0	-	1	0	1	-	-	2	-	-	-	1	0	4	-	2	-	0	-	0	-	0	0.9	0.5	0.0	1.6	0.5	0.5
GOOSE CLUB FARMS NORTH LLC ET	29-250-007	57	-	-	4	1	1	-	-	2	-	-	-	1	0	5	-	2	-	-	-	0	-	1	1.7	4.0	1.0	2.0	0.5	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-006	58	0	-	6	4	1	-	-	0	-	-	0	1	0	1	-	1	-	0	-	0	-	0	1.1	3.0	4.0	0.4	0.3	0.5
GOOSE CLUB FARMS NORTH LLC ET	34-100-007	59	0	-	-	0	0	1	-	1	-	-	-	-	-	-	-	-	-	0	-	0	-	1	0.4	0.0	0.0	0.7	0.5	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	60	0	-	9	4	0	-	-	0	-	-	0	0	0	0	-	0	-	0	-	1	-	0	1.1	4.5	4.0	0.2	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	61	-	-	1	0	1	-	-	1	-	-	-	1	0	6	-	4	-	-	-	0	-	0	1.4	1.0	0.0	2.2	0.5	1.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	62	-	-	0	0	0	-	-	0	-	-	-	-	1	-	0	-	-	-	-	1	-	0	0.3	0.0	0.0	0.3	0.5	-
GOOSE CLUB FARMS NORTH LLC ET	34-100-007	63	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	-	-	-	0.0	0.0	-	-	-	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-100-007	64	0	-	3	-	-	1	-	11	-	-	0	0	0	-	-	0	-	0	-	1	-	0	1.5	1.5	-	3.0	0.3	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	65	-	-	3	1	0	-	-	2	-	-	-	1	1	-	-	0	-	-	-	0	-	1	1.0	3.0	1.0	0.8	0.5	1.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	66	-	-	0	0	1	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	-	0	0.1	0.0	0.0	0.0	1.0	-
GOOSE CLUB FARMS NORTH LLC ET	34-110-025	67	0	-	-	1	0	0	-	0	-	-	-	-	-	-	-	-	-	1	-	0	-	0	0.3	0.0	1.0	0.0	0.0	1.0
GOOSE CLUB FARMS NORTH LLC	34-120-016	68	-	-	3	1	0	-	-	2	-	-	-	0	0	3	-	0	-	-	-	1	-	0	1.0	3.0	1.0	1.2	0.0	0.0
GOOSE CLUB FARMS NORTH LLC	34-120-016	69	0	-	-	0	0	0	-	0	-	-	-	-	-	-	-	-	-	0	-	0	-	0	0.0	0.0	0.0	0.0	0.0	0.0
GENERATIONS FARMLAND LLC	34-120-017	70	-	-	4	3	0	1	-	9	-	-	0	1	0	-	-	0	-	0	-	1	-	0	1.6	4.0	3.0	2.5	0.3	0.5
GENERATIONS FARMLAND LLC	34-120-017	71	-	-	1	0	1	-	-	1	-	-	-	0	1	6	-	4	-	-	-	1	-	0	1.5	1.0	0.0	2.4	1.0	0.0
GENERATIONS FARMLAND LLC	34-150-001	72	0	-	4	3	-	-	-	4	-	-	0	0	0	-	-	1	-	0	-	0	-	0	1.1	2.0	3.0	1.3	0.0	0.0
GENERATIONS FARMLAND LLC	34-150-001	73	-	-	3	1	1	-	-	2	-	-	-	1	0	7	-	4	-	-	-	0	-	0	1.9	3.0	1.0	2.6	0.5	1.0
GENERATIONS FARMLAND LLC	34-150-001	74	-	-	7	0	1	-	-	1	-	-	1	0	0	2	-	3	-	0	-	0	-	2	1.4	7.0	0.0	1.6	0.7	0.0
GENERATIONS FARMLAND LLC	34-150-001	75	-	-	2	2	1	-	-	2	-	-	-	-	0	-	-	0	-	-	-	0	-	0	0.9	2.0	2.0	0.5	0.5	-
GENERATIONS FARMLAND LLC	34-180-001	76	0	-	7	2	0	-	-	0	-	-	0	1	0	1	-	1	-	0	-	1	-	0	1.0	3.5	2.0	0.6	0.0	0.5
GENERATIONS FARMLAND LLC	34-180-001	77	-	-	3	1	1	-	-	2	-	-	-	1	0	-	-	0	-	-	-	1	-	0	1.0	3.0	1.0	0.8	0.5	1.0
GENERATIONS FARMLAND LLC	34-180-001	78	-	-	2	1	0	-	-	2	-	-	-	1	0	5	-	2	-	0	-	0	-	0	1.2	2.0	1.0	1.8	0.0	0.5
GENERATIONS FARMLAND LLC	34-180-003	79	-	-	3	1	0	-	-	2	-	-	-	1	0	-	-	0	-	-	-	0	-	1	0.9	3.0	1.0	0.8	0.0	1.0
GENERATIONS FARMLAND LLC	34-180-003	80	-	-	2	1	2	-	-	1	-	-	-	1	0	-	2	0	-	-	-	0	-	0	0.9	2.0	1.0	0.3	1.0	1.0
CREPS REV '05 TR ETAL	24-080-007	81	0	-	-	2	1	-	-	2	-	-	0	-	0	12	-	-	-	-	1	1	-	-	2.1	0.0	2.0	5.0	0.3	1.0
CREPS REV '05 TR ETAL	24-080-007	82	1	-	2	2	1	19	-	3	-	-	1	1	0	6	-	3	-	-	1	1	-	-	3.2	1.5	2.0	3.3	5.3	1.0
GENERATIONS FARMLAND LLC	34-150-001	83	0	-	11	3	0	-	-	0	-	-	0	1	0	1	-	1	-	0	-	0	-	0	1.3	5.5	3.0	0.4	0.0	0.5
GENERATIONS FARMLAND LLC	34-150-001	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	-	-	-	0.5	-	-	-	-	0.5
ROGERS FRANK A JR ETAL	13-340-001	85	-	-	0	1	0	-	-	1	-	-	-	0	0	-	1	-	-	-	-	0	-	0	0.3	0.5	1.0	0.3	0.0	0.0
ROGERS FRANK A JR ETAL	13-190-014	86	-	-	0	0	0	-	-	0	-	-	-	0	0	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	0.0
ROGERS FRANK A JR ETAL	13-340-005	87	0	-	0	0	0	-	-	0	-	-	0	7	0	0	1	-	-	-	0	0	-	5	1.0	0.3	0.0	1.3	0.0	3.5
NORDIC INDUSTRIES INC/ ETAL	29-210-024	88	-	-	3	2	1	-	-	2	-	-	-	-	0	-	1	-	-	-	-	2	-	1	1.5	2.0	2.0	1.7	0.5	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-007	89	0	-	1	0	0	-	-	2	-	-	-	0	0	6	-	5	-	-	-	0	-	0	1.3	0.5	0.0	2.6	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-110-025	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GENERATIONS FARMLAND LLC	34-110-026	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEFTY FAM '05 TR ETAL	34-210-006	92	-	-	0	1	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.1	0.0	1.0	0.0	0.0	-
PETERS LAURA H	34-210-012	93	-	-	3	2	1	-	-	2	-	-	-	1	0	-	-	0	-	-	-	1	-	0	1.1	3.0	2.0	0.8	0.5	1.0
PETERS LAURA H	34-210-012	94	-	-	0	1	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.1	0.0	1.0	0.0	0.0	-
PETERS LAURA H	34-210-012	95	-	-	0	0	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	-
PETERS LAURA H	34-210-012	96	-	-	1	0	0	-	-	1	-	-	-	-	0	-	0	0	-	-	-	1	-	0	0.3	0.5	0.0	0.5	0.0	-
PETERS LAURA H	34-210-012	97	-	-	2	0	1	-	-	0	-	-	-	-	1	-	0	0	-	-	-	0	-	0	0.4	1.0	0.0	0.0	1.0	-
R & J FARMS INC	34-210-004	98	-	-	0	0	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	-
PETERS LAURA H	34-210-012	99	-	-	3	2	0	-	-	1	-	-	-	1	0	-	-	0	-	-	-	-	-	0	0.9	3.0	2.0	0.3	0.0	1.0
PETERS LAURA H	34-210-012	100	-	-	3	1	0	-	-	2	-	-	-	1	0	3	-	0	-	-	-	1	-	0	1.1	3.0	1.0	1.2	0.0	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-007	101	-	-	0	0	0	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	-
GIAMPAOLI JENNIFER F ETAL	13-190-013	102	-	-	1	0	0	-	-	0	-	-	-	0	0	0	0	1	-	0	-	0	-	0	0.2	0.5	0.0	0.2	0.0	0.0
GIAMPAOLI JENNIFER F ETAL	13-140-084	103	-	-	2	0	0	-	-	1	-	-	-	0	0	0	0	0	-	0	-	0	-	0	0.3	1.0	0.0	0.2	0.0	0.0
TARKE LIV TR	13-140-008	104	-	-	0	0	0	-	-	0	-	0	-	-	0	-	0	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	0.0	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	105	-	-	0	0	1	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.1	0.0	0.0	0.0	0.5	-
SAC/SAN JOAQUIN DRAINAGE DIST	13-340-045	106	-	-	0	0	0	-	-	0	-	-	0	-	0	-	0	-	-	-	-	0	-	-	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-027	107	-	-	0	0	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	0	0	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-027	108	0	-	0	0	0	-	-	0	-	-	-	-	0	0	-	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-027	109	0	-	0	0	0	-	-	0	-	-	-	-	0	0	-	-	-	-	-	0	0	0	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-034	110	0	-	0	0	0	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-027	111	0	-	0	0	0	-	-	0	-	-	-	-	0	-	-	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	0.0	-

Majority Owner (by Area)	APN	Field ID	Change in Number of Wet Days (days)																					Avg. Change in Number of Wet Days (days)	Avg. Change in Number of Wet Days (days)				
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		Wet	Above Normal	Below Normal	Dry	Critical
DEFTY FAM TRUST	057 030 01	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEFTY FAM TRUST	057 030 01	113	-	-	0	0	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-007	114	-	-	0	0	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	-	-

Notes:

[1] As shown on Figures 5a and 5b, Appendix C, TUFLOW Model Results and CEQA Impact Analysis.

[2] "-" = NA (i.e., model predicts field is dry under all conditions or field is fallow under existing conditions).

Attachment B2

Field Prep Sowing Season Summary WYs 1997-2018

Majority Owner (by Area)	APN	Field ID [1]	Change in Number of Wet Days (days) [2]																					Avg. Change in Number of Wet Days (days)	Avg. Change in Number of Wet Days (days)				
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		Wet	Above Normal	Below Normal	Dry	Critical
Majority Owner (by Area)																														
CREPS REV '05 TR ETAL	21-240-031	0	-	-	1	3	1	-	-	2	-	-	-	1	0	4	58	0	-	-	-	1	-	1	6.5	29.5	3.0	1.6	0.5	1.0
CREPS REV '05 TR ETAL	21-240-031	1	1	-	1	2	0	-	-	3	-	-	0	0	0	14	59	1	-	-	-	1	-	1	6.4	20.3	2.0	4.0	0.0	0.0
CREPS REV '05 TR ETAL	21-240-029	2	1	-	1	2	1	-	-	3	-	-	1	1	0	12	58	0	-	-	-	1	-	1	6.3	20.0	2.0	3.4	0.7	1.0
CREPS REV '05 TR ETAL	21-240-029	3	-	-	1	1	0	-	-	2	-	-	-	1	0	-	58	1	-	-	-	2	-	1	6.7	29.5	1.0	1.5	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	4	-	-	0	3	0	-	-	2	-	-	-	1	0	-	1	32	-	-	-	1	-	1	4.1	0.5	3.0	9.0	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	5	1	-	1	3	0	-	-	2	-	-	0	1	0	12	59	1	-	-	-	1	-	0	6.2	20.3	3.0	3.2	0.0	1.0
CREPS REV '05 TR ETAL	21-240-028	6	-	-	1	2	0	-	-	2	-	-	-	1	0	-	58	1	-	-	-	2	-	0	6.7	29.5	2.0	1.3	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	7	1	-	1	2	1	-	-	2	-	-	0	1	0	1	-	40	-	-	1	1	-	-	4.3	1.0	2.0	11.0	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	8	1	-	1	3	1	-	-	2	-	-	0	1	0	1	-	57	-	-	1	1	-	-	5.8	1.0	3.0	15.3	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	9	1	-	1	3	0	-	-	2	-	-	0	1	0	1	47	10	-	-	1	2	-	1	5.0	16.3	3.0	3.2	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	10	1	-	1	4	1	-	-	3	-	-	0	2	0	5	-	8	-	-	1	1	-	-	2.3	1.0	4.0	4.3	0.3	1.5
CREPS REV '05 TR ETAL	21-240-016	11	1	-	1	3	0	-	-	2	-	-	0	1	0	2	-	40	-	-	1	1	-	-	4.3	1.0	3.0	11.3	0.0	1.0
CREPS REV '05 TR ETAL	21-240-016	12	1	-	2	2	0	-	-	3	-	-	0	1	1	2	-	-	-	-	1	2	-	-	1.4	1.5	2.0	2.3	0.3	1.0
CREPS REV '05 TR ETAL	21-240-016	13	1	-	1	3	1	-	-	3	-	-	0	1	0	1	2	-	-	-	2	1	-	0	1.2	1.3	3.0	1.3	0.3	1.5
CREPS REV '05 TR ETAL	21-240-016	14	1	-	2	3	1	-	-	3	-	-	0	1	1	14	-	-	-	-	1	1	-	-	2.5	1.5	3.0	6.0	0.7	1.0
CREPS REV '05 TR ETAL	24-080-007	15	1	-	1	3	0	-	-	3	-	-	1	2	0	3	-	-	-	-	1	2	-	-	1.5	1.0	3.0	2.7	0.3	1.5
CREPS REV '05 TR ETAL	24-080-007	16	2	-	-	-	1	-	-	3	-	-	0	-	0	2	-	-	-	-	1	-	-	-	1.3	2.0	-	2.5	0.3	1.0
CREPS REV '05 TR ETAL	24-080-007	17	1	-	-	3	1	-	-	2	-	-	0	-	0	14	-	48	-	-	2	2	-	-	7.3	1.0	3.0	16.5	0.3	2.0
CREPS REV '05 TR ETAL	21-240-016	18	1	-	1	4	2	-	-	3	-	-	0	1	0	2	-	-	-	-	1	1	-	-	1.5	1.0	4.0	2.0	0.7	1.0
CREPS REV '05 TR ETAL	24-070-001	19	3	-	2	3	1	-	-	3	-	-	1	1	1	14	-	34	-	-	2	1	-	-	5.5	2.5	3.0	13.0	1.0	1.5
CREPS REV '05 TR ETAL	24-070-001	20	1	-	2	3	1	-	-	3	-	-	0	2	0	17	-	4	-	-	1	2	-	-	3.0	1.5	3.0	6.5	0.3	1.5
CREPS REV '05 TR ETAL	24-080-007	21	1	-	2	2	0	-	-	3	-	-	1	1	0	16	-	4	-	-	1	1	-	-	2.7	1.5	2.0	6.0	0.3	1.0
CREPS REV '05 TR ETAL	24-070-001	22	1	-	2	3	1	-	-	3	-	-	0	1	0	17	-	3	-	-	1	2	-	-	2.8	1.5	3.0	6.3	0.3	1.0
CREPS REV '05 TR ETAL	24-070-001	23	0	-	1	0	0	-	-	1	-	-	-	0	0	0	-	0	-	0	-	1	-	0	0.3	0.5	0.0	0.4	0.0	0.0
TJ HOLDINGS LP	24-120-001	24	0	-	1	0	0	-	-	0	-	-	-	0	0	0	-	2	-	0	-	1	-	0	0.3	0.5	0.0	0.6	0.0	0.0
TJ HOLDINGS LP	24-120-017	25	-	-	2	2	0	-	-	3	-	-	-	1	0	7	-	34	-	-	-	1	-	0	5.0	2.0	2.0	9.0	0.0	1.0
TJ HOLDINGS LP	24-120-017	26	-	-	1	1	1	-	-	3	-	-	-	1	0	10	-	4	-	-	-	1	-	0	2.2	1.0	1.0	3.6	0.5	1.0
TJ HOLDINGS LP	24-130-029	27	0	-	2	1	1	-	-	3	-	-	0	2	0	18	-	54	-	-	1	1	-	-	6.9	1.0	1.0	19.0	0.3	1.5
TJ HOLDINGS LP	24-130-029	28	0	-	1	2	0	-	-	3	-	-	0	1	0	17	59	48	-	-	1	1	-	1	9.6	20.0	2.0	14.0	0.0	1.0
TJ HOLDINGS LP	24-130-023	29	1	-	2	2	1	-	-	3	-	-	0	1	0	17	-	53	-	-	1	2	-	-	6.9	1.5	2.0	18.8	0.3	1.0
DE WIT FARMS INC	24-130-030	30	1	-	1	2	1	-	-	2	-	-	0	1	0	16	-	36	-	-	1	1	-	-	5.2	1.0	2.0	13.8	0.3	1.0
DE WIT FARMS LLC	25-130-049	31	2	-	1	1	1	-	-	2	-	-	1	1	1	18	-	24	-	-	1	1	-	-	4.5	1.5	1.0	11.3	1.0	1.0
DNH FARMS GP	25-130-035	32	1	-	1	1	1	-	-	2	-	-	1	0	0	17	-	14	-	-	0	2	-	-	3.3	1.0	1.0	8.8	0.7	0.0
DNH FARMS GP	25-130-035	33	1	-	1	1	0	-	-	2	-	-	0	1	0	15	-	48	-	-	1	1	-	-	5.9	1.0	1.0	16.5	0.0	1.0
DNH FARMS GP	25-130-019	34	1	-	1	3	1	-	-	3	-	-	1	0	0	1	2	-	-	-	1	1	-	1	1.2	1.3	3.0	1.5	0.7	0.5
DNH FARMS GP	25-130-019	35	1	-	1	3	1	-	-	2	-	-	1	1	0	1	45	-	-	-	1	2	-	-	4.9	15.7	3.0	1.7	0.7	1.0
DNH FARMS GP	25-200-030	36	1	-	2	3	0	-	-	3	-	-	0	1	0	14	60	-	-	-	1	1	-	0	6.6	21.0	3.0	4.5	0.0	1.0
NORDIC INDUSTRIES INC/ ETAL	25-200-043	37	1	-	1	2	1	-	-	2	-	-	1	0	0	1	1	-	-	-	-	1	-	1	1.0	1.0	2.0	1.3	0.7	0.0
NORDIC INDUSTRIES INC/ ETAL	25-200-043	38	0	-	1	3	0	-	-	2	-	-	1	1	1	2	2	-	-	-	1	1	-	-	1.3	1.0	3.0	1.7	0.7	1.0
NORDIC INDUSTRIES INC/ ETAL	25-200-043	39	-	-	1	3	1	-	-	2	-	-	-	1	0	-	1	-	-	-	-	1	-	0	1.1	1.0	3.0	1.0	0.5	1.0
NORDIC INDUSTRIES INC/ ETAL	29-210-024	40	1	-	0	1	0	-	-	1	-	-	1	9	0	-	0	-	-	-	-	0	-	0	1.2	0.3	1.0	0.3	0.3	9.0
NORDIC INDUSTRIES INC/ ETAL	29-210-023	41	-	-	1	2	0	-	-	1	-	-	-	-	0	-	1	-	-	-	-	1	-	0	0.8	1.0	2.0	0.7	0.0	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	42	-	-	1	0	1	-	-	1	-	-	-	-	1	-	1	-	-	-	-	0	-	0	0.6	1.0	0.0	0.3	1.0	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	43	-	-	3	0	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	0	0	-	0.4	0.8	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	44	-	-	1	2	1	-	-	2	-	-	-	1	0	-	1	-	-	-	-	1	-	0	1.0	1.0	2.0	1.0	0.5	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	45	-	0	-	0	-	-	-	0	-	0	-	-	-	-	0	-	-	-	-	-	0	-	0.0	0.0	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-008	46	-	-	0	0	-	-	-	0	-	1	-	-	-	-	0	-	-	-	-	0	0	-	0.1	0.3	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-008	47	-	-	1	1	0	-	-	2	-	-	-	1	0	10	-	15	-	-	-	1	-	0	3.1	1.0	1.0	5.6	0.0	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-230-007	48	0	-	1	0	0	-	-	2	-	-	-	0	0	6	-	4	-	-	-	1	-	0	1.3	0.5	0.0	2.6	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-230-007	49	-	-	1	0	1	-	-	1	-	-	-	0	0	6	-	2	-	0	-	1	-	0	1.1	1.0	0.0	2.0	0.5	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	50	-	-	1	1	0	-	-	2	-	-	-	1	0	9	-	14	-	-	-	0	-	0	2.8	1.0	1.0	5.0	0.0	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	51	-	-	0	0	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	52	-	-	0	0	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	-	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	53	-	-	1	1	0	-	-	2	-	-	-	1	0	12	-	15	-	-	-	1	-	0	3.3	1.0	1.0	6.0	0.0	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	54	0	-	20	22	0	-	-	1	-	-	0	0	0	1	-	0	-	0	-	0	-	0	3.4	10.0	22.0	0.4	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-006	55	0	-	2	1	1	0	-	14	-	-	-1	1	0	-	-	0	-	-1	-	0	-	0	1.3	1.0	1.0	3.5	0.0	0.0

Majority Owner (by Area)	APN	Field ID [1]	Change in Number of Wet Days (days) [2]																					Avg. Change in Number of Wet Days (days)	Avg. Change in Number of Wet Days (days)				
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		Wet	Above Normal	Below Normal	Dry	Critical
GOOSE CLUB FARMS NORTH LLC ET	29-250-006	56	0	-	1	0	1	-	-	2	-	-	-	1	0	4	-	2	-	0	-	0	-	0	0.9	0.5	0.0	1.6	0.5	0.5
GOOSE CLUB FARMS NORTH LLC ET	29-250-007	57	-	-	1	1	0	-	-	2	-	-	-	1	0	8	-	14	-	-	-	0	-	0	2.7	1.0	1.0	4.8	0.0	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-006	58	0	-	4	3	1	-	-	0	-	-	0	1	0	1	-	0	-	0	-	0	-	0	0.8	2.0	3.0	0.2	0.3	0.5
GOOSE CLUB FARMS NORTH LLC ET	34-100-007	59	0	-	-	0	0	0	-	1	-	-	-	-1	-	-	-	-	-	0	-	0	-	1	0.1	0.0	0.0	0.7	0.0	-0.5
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	60	0	-	8	21	0	-	-	0	-	-	0	0	0	0	-	0	-	0	-	1	-	0	2.3	4.0	21.0	0.2	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	61	-	-	1	0	1	-	-	1	-	-	-	1	0	6	-	4	-	-	-	0	-	0	1.4	1.0	0.0	2.2	0.5	1.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	62	-	-	0	0	0	-	-	0	-	-	-	-	5	-	0	-	-	-	-	0	-	0	0.6	0.0	0.0	0.0	2.5	-
GOOSE CLUB FARMS NORTH LLC ET	34-100-007	63	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	-	-	-	0.0	0.0	-	-	-	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-100-007	64	0	-	3	-	-1	1	-	13	-	-	0	0	0	-	-	0	-	0	-	1	-	0	1.4	1.5	-	3.5	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	65	-	-	1	1	0	-	-	2	-	-	-	1	1	-	-	0	-	-	-	0	-	0	0.7	1.0	1.0	0.5	0.5	1.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	66	-	-	0	0	0	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	-
GOOSE CLUB FARMS NORTH LLC ET	34-110-025	67	0	-	-	1	0	0	-	0	-	-	-	0	-	-	-	0	-	1	-	0	-	0	0.2	0.0	1.0	0.0	0.0	0.5
GOOSE CLUB FARMS NORTH LLC	34-120-016	68	-	-	1	1	0	-	-	2	-	-	-	0	0	5	-	0	-	-	-	1	-	0	1.0	1.0	1.0	1.6	0.0	0.0
GOOSE CLUB FARMS NORTH LLC	34-120-016	69	0	-	-	0	0	0	-	0	-	-	-	0	-	-	-	0	-	0	-	0	-	0	0.0	0.0	0.0	0.0	0.0	0.0
GENERATIONS FARMLAND LLC	34-120-017	70	-1	-	4	2	0	1	-	13	-	-	0	1	0	-	-	0	-	0	-	1	-	0	1.6	1.5	2.0	3.5	0.3	0.5
GENERATIONS FARMLAND LLC	34-120-017	71	-	-	1	0	1	-	-	1	-	-	-	0	1	6	-	4	-	-	-	1	-	0	1.5	1.0	0.0	2.4	1.0	0.0
GENERATIONS FARMLAND LLC	34-150-001	72	0	-	3	2	-1	-	-	14	-	-	0	0	0	-	-	0	-	0	-	0	-	0	1.5	1.5	2.0	3.5	-0.3	0.0
GENERATIONS FARMLAND LLC	34-150-001	73	-	-	1	1	1	-	-	2	-	-	-	1	0	8	-	14	-	-	-	0	-	0	2.8	1.0	1.0	4.8	0.5	1.0
GENERATIONS FARMLAND LLC	34-150-001	74	-	-	18	0	1	-	-	1	-	-	3	0	0	2	-	12	-	0	-	0	-	1	3.2	18.0	0.0	3.2	1.3	0.0
GENERATIONS FARMLAND LLC	34-150-001	75	-	-	1	2	1	-	-	2	-	-	-	-	0	-	-	0	-	-	-	0	-	0	0.8	1.0	2.0	0.5	0.5	-
GENERATIONS FARMLAND LLC	34-180-001	76	0	-	18	21	0	-	-	0	-	-	0	1	0	1	-	0	-	0	-	1	-	0	3.2	9.0	21.0	0.4	0.0	0.5
GENERATIONS FARMLAND LLC	34-180-001	77	-	-	1	1	1	-	-	2	-	-	-	1	0	-	-	0	-	-	-	1	-	0	0.8	1.0	1.0	0.8	0.5	1.0
GENERATIONS FARMLAND LLC	34-180-001	78	-	-	14	1	0	-	-	2	-	-	-	1	0	3	-	2	-	0	-	0	-	0	2.1	14.0	1.0	1.4	0.0	0.5
GENERATIONS FARMLAND LLC	34-180-003	79	-	-	1	1	0	-	-	2	-	-	-	1	0	-	-	0	-	-	-	0	-	0	0.6	1.0	1.0	0.5	0.0	1.0
GENERATIONS FARMLAND LLC	34-180-003	80	-	-	0	1	0	-	-	1	-	-	-	1	0	-	56	0	-	-	-	0	-	0	5.9	28.0	1.0	0.3	0.0	1.0
CREPS REV '05 TR ETAL	24-080-007	81	0	-	-	2	1	-	-	2	-	-	0	-	0	12	-	-	-	-	1	1	-	-	2.1	0.0	2.0	5.0	0.3	1.0
CREPS REV '05 TR ETAL	24-080-007	82	1	-	2	2	1	20	-	3	-	-	1	1	0	6	-	3	-	-	1	1	-	-	3.2	1.5	2.0	3.3	5.5	1.0
GENERATIONS FARMLAND LLC	34-150-001	83	0	-	20	21	0	-	-	0	-	-	0	1	0	1	-	0	-	0	-	0	-	0	3.3	10.0	21.0	0.2	0.0	0.5
GENERATIONS FARMLAND LLC	34-150-001	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	-	-	-	0.0	-	-	-	-	0.0
ROGERS FRANK A JR ETAL	13-340-001	85	-	-	0	1	0	-	-	1	-	-	-	0	0	-	1	-	-	-	-	0	-	0	0.3	0.5	1.0	0.3	0.0	0.0
ROGERS FRANK A JR ETAL	13-190-014	86	-	-	0	0	0	-	-	0	-	-	-	0	0	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	0.0
ROGERS FRANK A JR ETAL	13-340-005	87	0	-	0	0	0	-	-	0	-	-	0	7	0	0	1	-	-	-	0	0	-	5	1.0	0.3	0.0	1.3	0.0	3.5
NORDIC INDUSTRIES INC/ ETAL	29-210-024	88	-	-	1	2	0	-	-	2	-	-	-	-	0	-	1	-	-	-	-	2	-	0	1.0	1.0	2.0	1.3	0.0	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-007	89	0	-	1	0	0	-	-	2	-	-	-	0	0	6	-	5	-	-	-	0	-	0	1.3	0.5	0.0	2.6	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-110-025	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GENERATIONS FARMLAND LLC	34-110-026	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEFTY FAM '05 TR ETAL	34-210-006	92	-	-	0	1	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.1	0.0	1.0	0.0	0.0	-
PETERS LAURA H	34-210-012	93	-	-	1	2	0	-	-	2	-	-	-	1	0	-	-	0	-	-	-	1	-	0	0.8	1.0	2.0	0.8	0.0	1.0
PETERS LAURA H	34-210-012	94	-	-	0	1	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.1	0.0	1.0	0.0	0.0	-
PETERS LAURA H	34-210-012	95	-	-	0	0	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	-
PETERS LAURA H	34-210-012	96	-	-	9	0	0	-	-	1	-	-	-	-	0	-	0	0	-	-	-	1	-	0	1.2	4.5	0.0	0.5	0.0	-
PETERS LAURA H	34-210-012	97	-	-	9	0	1	-	-	0	-	-	-	-	0	-	0	0	-	-	-	0	-	0	1.1	4.5	0.0	0.0	0.5	-
R & J FARMS INC	34-210-004	98	-	-	0	0	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	-
PETERS LAURA H	34-210-012	99	-	-	1	2	0	-	-	1	-	-	-	1	0	-	-	0	-	-	-	0	-	0	0.6	1.0	2.0	0.3	0.0	1.0
PETERS LAURA H	34-210-012	100	-	-	1	1	0	-	-	2	-	-	-	1	0	5	-	0	-	-	-	1	-	0	1.1	1.0	1.0	1.6	0.0	1.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-007	101	-	-	0	0	0	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	-
GIAMPAOLI JENNIFER F ETAL	13-190-013	102	-	-	1	0	0	-	-	0	-	-	-	0	0	0	0	12	-	0	-	0	-	0	1.1	0.5	0.0	2.4	0.0	0.0
GIAMPAOLI JENNIFER F ETAL	13-140-084	103	-	-	1	0	0	-	-	1	-	-	-	0	0	0	0	0	-	0	-	0	-	0	0.2	0.5	0.0	0.2	0.0	0.0
TARKE LIV TR	13-140-008	104	-	-	0	0	0	-	-	0	-	0	-	-	0	-	0	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	0.0	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	105	-	-	0	0	1	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.1	0.0	0.0	0.0	0.5	-
SAC/SAN JOAQUIN DRAINAGE DIST	13-340-045	106	-	-	0	0	0	-	-	0	-	-	0	-	0	-	0	-	-	-	-	0	-	-	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-027	107	-	-	0	0	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	0	0	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-027	108	0	-	0	0	0	-	-	0	-	-	-	-	0	0	-	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-027	109	0	-	0	0	0	-	-	0	-	-	-	-	0	0	-	-	-	-	-	0	0	0	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-034	110	0	-	0	0	0	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	0.0	-
CENTRAL LAND CO	13-340-027	111	0	-	0	0	0	-	-	0	-	-	-	-	0	-	-	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	0.0	-

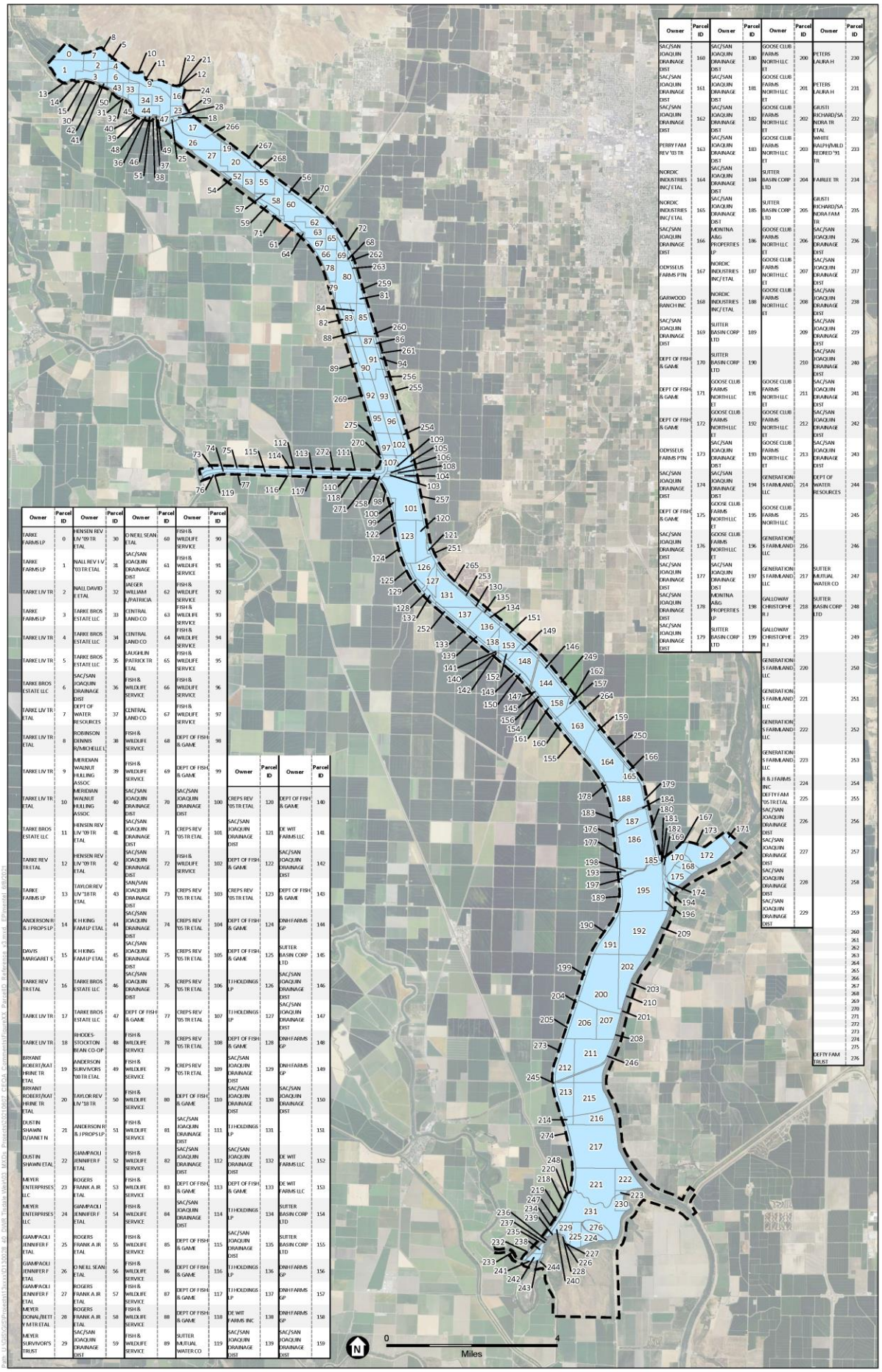
Majority Owner (by Area)	APN	Field ID [1]	Change in Number of Wet Days (days) [2]																					Avg. Change in Number of Wet Days (days)	Avg. Change in Number of Wet Days (days)				
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		Wet	Above Normal	Below Normal	Dry	Critical
DEFTY FAM TRUST	057 030 01	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEFTY FAM TRUST	057 030 01	113	-	-	0	0	0	-	-	0	-	-	-	-	0	-	0	-	-	-	-	0	-	0	0.0	0.0	0.0	0.0	0.0	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-007	114	-	-	0	0	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	0	-	0.0	0.0	0.0	0.0	-	-

Notes:

[1] As shown on Figures 5a and 5b, Appendix C, TUFLOW Model Results and CEQA Impact Analysis.

[2] "-" = NA (i.e., model predicts field is dry under all conditions or field is fallow under existing conditions).

Attachment C



Owner	Parcel ID
TARKE FARMS LP	0
TARKE FARMS LP	1
TARKE LIV TR	2
TARKE FARMS LP	3
TARKE LIV TR	4
TARKE LIV TR	5
TARKE BROS ESTATE LLC	6
TARKE LIV TR ETAL	7
TARKE LIV TR ETAL	8
TARKE LIV TR	9
TARKE LIV TR ETAL	10
TARKE BROS ESTATE LLC	11
TARKE REV TR ETAL	12
TARKE FARMS LP	13
ANDERSON R & J PROPS LP	14
DAVIS MARGARET S	15
TARKE REV TR ETAL	16
TARKE LIV TR	17
TARKE LIV TR	18
BRYANT ROBERT/NATHRINE TR ETAL	19
BRYANT ROBERT/NATHRINE TR ETAL	20
DUSTIN SHAWN D/JANET N	21
DUSTIN SHAWN ETAL	22
MEYER ENTERPRISES LLC	23
MEYER ENTERPRISES LLC	24
GIAMPAOLI JENNIFER F ETAL	25
GIAMPAOLI JENNIFER F ETAL	26
GIAMPAOLI JENNIFER F ETAL	27
MEYER DONAL/BETTY MTR ETAL	28
MEYER SURVIVOR'S TRUST	29
HENSEN REV LIV '09 TR ETAL	30
WALL REV LV '03 TR ETAL	31
WALL DAVID E ETAL	32
TARKE BROS ESTATE LLC	33
TARKE BROS ESTATE LLC	34
TARKE BROS ESTATE LLC	35
SAC/SAN JOAQUIN DRAINAGE DIST	36
DEPT OF WATER RESOURCES	37
ROBINSON DENNIS R/MICHELLE L	38
MERIDIAN WALNUT HULLING ASSOC	39
MERIDIAN WALNUT HULLING ASSOC	40
HENSEN REV LIV '09 TR ETAL	41
HENSEN REV LIV '09 TR ETAL	42
TAYLOR REV LIV '18 TR ETAL	43
K H KING FAM LP ETAL	44
K H KING FAM LP ETAL	45
TARKE BROS ESTATE LLC	46
DEPT OF FISH & GAME	47
RHODES-STOCKTON BEAN CO-OP	48
ANDERSON SURVIVORS '00 TR ETAL	49
TAYLOR REV LIV '18 TR	50
ANDERSON R & J PROPS LP	51
GIAMPAOLI JENNIFER F ETAL	52
ROGERS FRANK A JR ETAL	53
GIAMPAOLI JENNIFER F ETAL	54
ROGERS FRANK A JR ETAL	55
O NEILL SEAN ETAL	56
ROGERS FRANK A JR ETAL	57
ROGERS FRANK A JR ETAL	58
SAC/SAN JOAQUIN DRAINAGE DIST	59
O NEILL SEAN ETAL	60
SAC/SAN JOAQUIN DRAINAGE DIST	61
JAEGER WILLIAM J/PATRICIA	62
CENTRAL LAND CO	63
CENTRAL LAND CO	64
LAUGHLIN PATRICK TR ETAL	65
FISH & WILDLIFE SERVICE	66
CENTRAL LAND CO	67
FISH & WILDLIFE SERVICE	68
FISH & WILDLIFE SERVICE	69
SAC/SAN JOAQUIN DRAINAGE DIST	70
SAC/SAN JOAQUIN DRAINAGE DIST	71
FISH & WILDLIFE SERVICE	72
SAN/SAN JOAQUIN DRAINAGE DIST	73
SAC/SAN JOAQUIN DRAINAGE DIST	74
SAC/SAN JOAQUIN DRAINAGE DIST	75
SAC/SAN JOAQUIN DRAINAGE DIST	76
DEPT OF FISH & GAME	77
CREPS REV '05 TR ETAL	78
CREPS REV '05 TR ETAL	79
DEPT OF FISH & GAME	80
SAC/SAN JOAQUIN DRAINAGE DIST	81
SAC/SAN JOAQUIN DRAINAGE DIST	82
DEPT OF FISH & GAME	83
SAC/SAN JOAQUIN DRAINAGE DIST	84
DEPT OF FISH & GAME	85
DEPT OF FISH & GAME	86
DEPT OF FISH & GAME	87
DEPT OF FISH & GAME	88
SUTTER MUTUAL WATER CO	89
FISH & WILDLIFE SERVICE	90
FISH & WILDLIFE SERVICE	91
FISH & WILDLIFE SERVICE	92
FISH & WILDLIFE SERVICE	93
FISH & WILDLIFE SERVICE	94
FISH & WILDLIFE SERVICE	95
FISH & WILDLIFE SERVICE	96
FISH & WILDLIFE SERVICE	97
DEPT OF FISH & GAME	98
DEPT OF FISH & GAME	99
CREPS REV '05 TR ETAL	100
SAC/SAN JOAQUIN DRAINAGE DIST	101
CREPS REV '05 TR ETAL	102
CREPS REV '05 TR ETAL	103
CREPS REV '05 TR ETAL	104
CREPS REV '05 TR ETAL	105
CREPS REV '05 TR ETAL	106
TI HOLDINGS LP	107
CREPS REV '05 TR ETAL	108
CREPS REV '05 TR ETAL	109
SAC/SAN JOAQUIN DRAINAGE DIST	110
SAC/SAN JOAQUIN DRAINAGE DIST	111
SAC/SAN JOAQUIN DRAINAGE DIST	112
DEPT OF FISH & GAME	113
TI HOLDINGS LP	114
SAC/SAN JOAQUIN DRAINAGE DIST	115
TI HOLDINGS LP	116
TI HOLDINGS LP	117
DE WIT FARMS LLC	118
SAC/SAN JOAQUIN DRAINAGE DIST	119
DEPT OF FISH & GAME	120
DE WIT FARMS LLC	121
SAC/SAN JOAQUIN DRAINAGE DIST	122
DEPT OF FISH & GAME	123
DNH FARMS GP	124
SUTTER BASIN CORP LTD	125
SAC/SAN JOAQUIN DRAINAGE DIST	126
SAC/SAN JOAQUIN DRAINAGE DIST	127
DNH FARMS GP	128
SAC/SAN JOAQUIN DRAINAGE DIST	129
SAC/SAN JOAQUIN DRAINAGE DIST	130
DE WIT FARMS LLC	131
DE WIT FARMS LLC	132
SUTTER BASIN CORP LTD	133
SUTTER BASIN CORP LTD	134
DNH FARMS GP	135
DNH FARMS GP	136
DNH FARMS GP	137
DNH FARMS GP	138
SAC/SAN JOAQUIN DRAINAGE DIST	139
DEPT OF FISH & GAME	140
DE WIT FARMS LLC	141
SAC/SAN JOAQUIN DRAINAGE DIST	142
SAC/SAN JOAQUIN DRAINAGE DIST	143
SAC/SAN JOAQUIN DRAINAGE DIST	144
SAC/SAN JOAQUIN DRAINAGE DIST	145
SAC/SAN JOAQUIN DRAINAGE DIST	146
SAC/SAN JOAQUIN DRAINAGE DIST	147
SAC/SAN JOAQUIN DRAINAGE DIST	148
SAC/SAN JOAQUIN DRAINAGE DIST	149
SAC/SAN JOAQUIN DRAINAGE DIST	150
TI HOLDINGS LP	151
SAC/SAN JOAQUIN DRAINAGE DIST	152
SUTTER BASIN CORP LTD	153
DNH FARMS GP	154
DNH FARMS GP	155
DNH FARMS GP	156
DNH FARMS GP	157
DNH FARMS GP	158
SAC/SAN JOAQUIN DRAINAGE DIST	159
GOOSE CLUB FARMS NORTH LLC ET	160
GOOSE CLUB FARMS NORTH LLC ET	161
GOOSE CLUB FARMS NORTH LLC ET	162
GOOSE CLUB FARMS NORTH LLC ET	163
SUTTER BASIN CORP LTD	164
SUTTER BASIN CORP LTD	165
GOOSE CLUB FARMS NORTH LLC ET	166
GOOSE CLUB FARMS NORTH LLC ET	167
NORDIC INDUSTRIES INC/ ETAL	168
SUTTER BASIN CORP LTD	169
SUTTER BASIN CORP LTD	170
GOOSE CLUB FARMS NORTH LLC ET	171
GOOSE CLUB FARMS NORTH LLC ET	172
SAC/SAN JOAQUIN DRAINAGE DIST	173
MONTNA A&G PROPERTIES LP	174
SUTTER BASIN CORP LTD	175
GOOSE CLUB FARMS NORTH LLC ET	176
SAC/SAN JOAQUIN DRAINAGE DIST	177
MONTNA A&G PROPERTIES LP	178
SUTTER BASIN CORP LTD	179
GOOSE CLUB FARMS NORTH LLC ET	180
GOOSE CLUB FARMS NORTH LLC ET	181
GOOSE CLUB FARMS NORTH LLC ET	182
GOOSE CLUB FARMS NORTH LLC ET	183
GOOSE CLUB FARMS NORTH LLC ET	184
SUTTER BASIN CORP LTD	185
GOOSE CLUB FARMS NORTH LLC ET	186
GOOSE CLUB FARMS NORTH LLC ET	187
GOOSE CLUB FARMS NORTH LLC ET	188
SUTTER BASIN CORP LTD	189
SUTTER BASIN CORP LTD	190
GOOSE CLUB FARMS NORTH LLC ET	191
GOOSE CLUB FARMS NORTH LLC ET	192
GOOSE CLUB FARMS NORTH LLC ET	193
GENERATION S FARMLAND LLC	194
GOOSE CLUB FARMS NORTH LLC	195
GOOSE CLUB FARMS NORTH LLC ET	196
GENERATION S FARMLAND LLC	197
GALLOWAY CHRISTOPHE R I	198
GALLOWAY CHRISTOPHE R I	199
GOOSE CLUB FARMS NORTH LLC ET	200
GOOSE CLUB FARMS NORTH LLC ET	201
GOOSE CLUB FARMS NORTH LLC ET	202
GOOSE CLUB FARMS NORTH LLC ET	203
GOOSE CLUB FARMS NORTH LLC ET	204
SUTTER BASIN CORP LTD	205
GOOSE CLUB FARMS NORTH LLC ET	206
GOOSE CLUB FARMS NORTH LLC ET	207
GOOSE CLUB FARMS NORTH LLC ET	208
SAC/SAN JOAQUIN DRAINAGE DIST	209
SAC/SAN JOAQUIN DRAINAGE DIST	210
GOOSE CLUB FARMS NORTH LLC ET	211
GOOSE CLUB FARMS NORTH LLC ET	212
GOOSE CLUB FARMS NORTH LLC	213
GOOSE CLUB FARMS NORTH LLC	215
GENERATION S FARMLAND LLC	216
GENERATION S FARMLAND LLC	217
GENERATION S FARMLAND LLC	220
GENERATION S FARMLAND LLC	221
GENERATION S FARMLAND LLC	222
GENERATION S FARMLAND LLC	223
R & J FARMS INC	224
DEFTY FAM '05 TR ETAL	225
SAC/SAN JOAQUIN DRAINAGE DIST	226
SAC/SAN JOAQUIN DRAINAGE DIST	227
SAC/SAN JOAQUIN DRAINAGE DIST	228
SAC/SAN JOAQUIN DRAINAGE DIST	229
PETERS LAURA H	230
PETERS LAURA H	231
GIUSTI RICHARD/SANDRA TR ETAL	232
WHITE RALPH/MILDRED '91 TR	233
FAIRLEE TR	234
GIUSTI RICHARD/SANDRA FAM TR	235
SAC/SAN JOAQUIN DRAINAGE DIST	236
SAC/SAN JOAQUIN DRAINAGE DIST	237
SAC/SAN JOAQUIN DRAINAGE DIST	238
SAC/SAN JOAQUIN DRAINAGE DIST	239
SAC/SAN JOAQUIN DRAINAGE DIST	240
SAC/SAN JOAQUIN DRAINAGE DIST	241
SAC/SAN JOAQUIN DRAINAGE DIST	242
SAC/SAN JOAQUIN DRAINAGE DIST	243
DEPT OF WATER RESOURCES	244
SUTTER MUTUAL WATER CO	247
SUTTER BASIN CORP LTD	248
DEFTY FAM TRUST	276

Parcel IDs correspond to the following tables in Attachment A1.

SOURCE: ESA 2021

Tisdale Weir Rehabilitation and Fish Passage Project

Figure 1
Attachment C

ESA

Waterfowl Season Summary WYs 1997-2018

Average Wet Day Inundated Area (%), Existing Conditions by WY

Owner	APN	Parcel ID	Parcel Area	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TARKE FARMS LP	13-070-035	0	117	75.7	93.9	53.3	-	-	61.6	58.7	52.1	47.4	72.1	-	-	-	53.8	39.2	-	45.9	-	51.8	44.8	68.9	-
TARKE FARMS LP	13-070-040	1	198	85.8	93.3	63.8	-	-	79.0	77.7	68.7	66.5	83.1	-	-	-	75.8	39.1	-	55.8	-	63.7	58.5	81.3	-
TARKE LIV TR	13-070-044	2	82	77.6	84.9	48.5	-	-	66.8	60.4	57.2	50.8	74.1	-	-	-	51.9	-	-	44.3	-	47.2	42.7	69.2	-
TARKE FARMS LP	13-070-045	3	113	68.9	75.6	40.9	38.6	-	45.4	53.4	42.3	41.7	61.6	36.8	38.2	-	45.2	37.8	33.3	42.8	31.9	42.1	40.5	57.6	-
TARKE LIV TR	13-070-051	4	70	73.4	81.9	44.9	38.3	-	49.6	57.5	44.6	45.8	64.1	38.5	37.9	-	49.6	39.2	32.5	48.7	-	49.0	43.4	62.5	-
TARKE LIV TR	13-070-052	5	9	81.3	91.0	61.6	33.3	-	67.5	65.2	56.9	52.3	77.4	39.0	37.4	-	63.9	35.6	-	58.2	-	60.4	49.8	74.7	-
TARKE BROS ESTATE LLC	13-070-053	6	76	77.6	82.2	63.1	-	-	69.5	63.4	39.0	31.7	82.8	-	-	-	35.0	-	-	-	-	37.9	-	66.5	-
TARKE LIV TR ETAL	13-070-054	7	87	76.2	81.9	55.8	-	-	64.4	62.5	46.8	46.4	73.9	-	-	-	44.9	-	-	41.8	-	43.5	-	64.8	-
TARKE LIV TR ETAL	13-070-056	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TARKE LIV TR	13-080-008	9	126	80.4	87.1	58.9	57.6	-	66.9	69.5	59.7	64.6	75.8	65.2	59.2	-	65.7	59.0	-	63.2	-	61.8	59.4	71.4	-
TARKE LIV TR ETAL	13-080-028	10	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TARKE BROS ESTATE LLC	13-080-033	11	0	100.0	100.0	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-
TARKE REV TR ETAL	13-080-043	12	0	78.6	66.7	-	-	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-
TARKE FARMS LP	13-090-020	13	3	47.7	53.2	-	-	-	33.3	33.3	-	-	42.3	-	-	-	-	-	-	-	-	-	-	33.3	-
ANDERSON R & J PROPS LP	13-090-026	14	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAVIS MARGARET S	13-090-122	15	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TARKE REV TR ETAL	13-140-001	16	84	85.9	93.1	68.4	60.3	-	69.6	73.9	68.2	69.3	80.9	69.2	63.2	-	67.7	63.9	-	69.5	-	69.7	62.6	79.9	-
TARKE LIV TR	13-140-008	17	167	89.9	97.5	60.0	-	-	86.2	75.5	68.4	64.8	85.0	-	-	-	71.5	-	-	57.9	-	59.2	58.9	87.1	-
TARKE LIV TR	13-140-010	18	13	83.9	90.4	59.5	-	-	77.0	72.8	65.7	65.3	81.0	-	-	-	62.1	-	-	59.3	-	54.9	56.8	79.2	-
BRYANT ROBERT/ KATHRINE TR ETAL	13-140-040	19	17	98.2	100.0	92.4	-	-	88.4	93.6	87.8	86.7	97.7	-	56.0	-	97.5	58.0	-	94.9	-	93.5	85.2	97.2	-
BRYANT ROBERT/ KATHRINE TR ETAL	13-140-047	20	182	96.4	99.4	79.5	81.2	-	85.9	93.0	79.7	85.6	91.3	87.4	77.0	-	86.8	81.7	35.5	88.8	-	88.4	82.8	91.5	-
DUSTIN SHAWN D/ JANET N	13-140-050	21	2	47.5	40.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUSTIN SHAWN ETAL	13-140-050	22	2	47.5	40.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MEYER ENTERPRISES LLC	13-140-061	23	47	74.8	84.7	48.1	-	-	64.5	58.1	51.6	45.5	70.6	-	-	-	51.2	30.0	-	43.5	-	45.4	45.7	67.7	-
MEYER ENTERPRISES LLC	13-140-083	24	2	56.6	58.8	37.5	-	-	46.4	43.3	37.5	37.5	56.0	-	-	-	37.5	-	-	37.5	-	37.5	-	45.5	-
GIAMPAOLI JENNIFER F ETAL	13-140-084	25	6	79.4	87.2	60.9	-	-	67.4	65.5	48.3	36.8	75.6	-	-	-	40.7	-	-	37.9	-	39.1	34.5	67.5	-
GIAMPAOLI JENNIFER F ETAL	13-140-084	26	255	83.9	87.5	52.3	43.1	-	55.4	71.8	54.5	55.4	77.8	39.5	43.1	-	63.6	45.4	34.5	64.2	-	61.5	54.2	74.3	-
GIAMPAOLI JENNIFER F ETAL	13-140-085	27	136	94.9	82.6	75.3	82.1	41.2	80.5	91.5	81.6	79.5	92.5	54.5	76.5	-	90.1	75.0	63.2	80.0	53.4	84.2	75.7	90.7	44.0
MEYER DONAL/ BETTY M TR ETAL	13-140-086	28	6	64.6	68.6	50.8	-	-	57.5	55.4	52.9	46.9	62.9	-	33.3	-	52.9	33.3	-	47.2	-	48.1	46.4	60.2	-
MEYER SURVIVOR'S TRUST	13-140-095	29	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HENSEN REV LIV '09 TR ETAL	13-150-001	30	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NALL REV I-V '03 TR ETAL	13-150-006	31	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NALL DAVID E ETAL	13-150-006	32	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TARKE BROS ESTATE LLC	13-150-021	33	69	86.7	87.0	62.4	59.4	-	64.8	78.4	64.4	65.5	80.3	52.4	58.4	-	70.5	60.8	41.1	69.3	-	69.2	65.9	78.9	-
TARKE BROS ESTATE LLC	13-150-022	34	51	94.3	92.7	81.6	84.3	-	81.0	94.5	83.8	83.2	90.9	80.1	80.3	-	89.5	83.4	44.9	87.4	-	85.5	86.9	92.0	-
TARKE BROS ESTATE LLC	13-150-023	35	179	74.1	86.6	46.9	-	-	64.0	57.0	48.2	41.3	70.8	-	30.0	-	46.6	31.7	-	40.8	-	41.3	38.8	65.8	-
SAC/ SAN JOAQUIN DRAINAGE DIST	13-150-026	36	3	92.2	99.3	76.6	58.9	-	73.6	82.9	80.1	80.6	88.9	85.7	71.4	-	75.5	70.4	-	80.5	-	79.9	67.6	88.9	-
DEPT OF WATER RESOURCES	13-150-034	37	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROBINSON DENNIS R/ MICHELLE L	13-150-043	38	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MERIDIAN WALNUT HULLING ASSOC	13-150-044	39	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MERIDIAN WALNUT HULLING ASSOC	13-150-046	40	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HENSEN REV LIV '09 TR ETAL	13-150-049	41	7	78.9	92.0	51.4	32.4	-	63.2	59.3	47.3	42.3	74.5	32.4	32.4	-	51.6	32.7	-	43.4	-	47.1	39.8	69.3	-
HENSEN REV LIV '09 TR ETAL	13-150-050	42	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TAYLOR REV LIV '18 TR ETAL	13-150-051	43	52	84.3	90.7	59.7	53.6	-	63.1	73.7	60.7	63.9	75.9	57.1	52.7	-	64.2	55.8	41.6	65.0	-	63.8	58.9	75.2	-
K H KING FAM LP ETAL	13-150-053	44	127	89.1	91.8	66.7	59.9	-	66.6	81.5	66.7	67.7	82.8	62.3	59.8	-	73.1	63.4	47.0	75.6	-	74.7	68.2	82.4	-
K H KING FAM LP ETAL	13-150-054	45	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TARKE BROS ESTATE LLC	13-150-070	46	2	97.0	99.1	94.8	50.0	-	91.8	93.3	86.7	84.4	95.6	71.4	76.2	-	97.1	67.3	-	93.4	-	95.2	81.6	96.2	-
TARKE BROS ESTATE LLC	13-150-074	47	40	85.3	95.0	59.0	-	-	75.1	71.3	65.5	55.4	80.7	-	34.5	-	64.9	36.1	-	52.7	-	56.6	53.6	77.8	-
RHODES-STOCKTON BEAN CO-OP	13-150-077	48	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON SURVIVORS '00 TR ETAL	13-150-083	49	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TAYLOR REV LIV '18 TR	13-150-085	50	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON R & J PROPS LP	13-150-091	51	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GIAMPAOLI JENNIFER F ETAL	13-190-013	52	53	98.0	94.9	91.0	99.1	-	97.7	99.5	95.9	97.2	99.9	59.3	95.1	-	99.9	88.4	86.7	95.6	-	95.3	99.6	98.3	-
ROGERS FRANK A JR ETAL	13-190-014	53	81	96.9	99.9	89.1	95.9	-	91.8	96.6	89.1	93.6	95.8	97.7	86.8	-	97.0	90.8	-	89.5	-	91.2	90.5	96.8	-
GIAMPAOLI JENNIFER F ETAL	13-190-043	54	15	97.7	94.1	89.5	95.1	-	91.7	99.1	94.6	92.7	98.6	68.0	92.5	-	99.2	88.2	72.1	95.2	-	88.6	95.1	97.4	-
ROGERS FRANK A JR ETAL	13-340-001	55	135	95.9	99.7	83.2	91.4	-	85.4	94.6	81.0	90.7	94.1	93.5	79.8	-	93.8	88.4	-	83.1	-	87.2	86.1	94.0	40.9
O NEILL SEAN ETAL	13-340-003	56	10	93.4	100.0	71.9	-	-	74.2	85.7	72.1	70.0	91.3	-	-	-	83.2	65.9	-	72.8	-	73.4	76.6	88.4	-
ROGERS FRANK A JR ETAL	13-340-004	57	8	97.8	100.0	89.3	100.0	-	93.2	97.9	93.6	95.2	97.2	100.0	86.5	-	97.4	90.7	-	86.3	-	89.7	91.6	97.6	56.8
ROGERS FRANK A JR ETAL	13-340-005	58	135	95.0	99.4	72.1	91.2	-	75.9	92.0	76.0	77.3	93.4	95.9	70.3	-	93.6	78.0	-	73.6	-	75.0	78.5	91.7	37.1
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-006	59	54	91.9	98.9	61.5	83.3	-	66.2	87.3	64.8	68.8	90.2	89.4	60.2	-	87.2	68.0	-	63.4	-	64.1	69.6	87.5	36.6
O NEILL SEAN ETAL	13-340-009	60	208	86.9	100.0	54.8	-	-	56.3	71.2	54.2	49.5	82.5	-	40.8	-	66.1	41.7	-	52.3	-	56.9	51.3	76.4	-
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-022	61	5	96.9	100.0	90.5	53.8	-	72.8	88.6	85.7	77.8	95.9	66.7	77.8	-	79.6	66.7	-	84.3	-	97.4	80.0	92.0	-
JAEGER WILLIAM L/ PATRICIA	13-340-025	62	109	93.5	99.8	70.3	-	-	74.9	84.7	74.8	72.9	90.2	-	-	-	81.9	-	-	73.9	-	71.0	68.1	87.1	33.6
CENTRAL LAND CO	13-340-027	63	108	88.0	99.8	57.6	-	-	61.7	72.2	60.3	57.5	82.2	-	32.6	-	66.5	-	-	57.9	-	57.6	56.9	77.5	42.4
CENTRAL LAND CO	13-340-028	64	5	90.4	100.0	64.9	-	-	76.2	71.6	63.5	57.2	85.9	-	48.9	-	73.6	41.0	-	64.6	-	69.6	58.2	85.2	-
LAUGHLIN PATRICK TR ETAL	13-340-032	65	80	95.1	99.7	72.5	-	-	90.9	84.5	79.7	70.7	90.5	-	-	-	77.9	-	-	66.1	-	70.5	75.9	92.0	-
FISH & WILDLIFE SERVICE	13-340-033	66	72	94.4	99.2	75.1	-	-	90.2	84.8	76.8	80.8	89.3	-	-	-	74.9	-	-	70.5	-	66.8	73.2	90.3	-
CENTRAL LAND CO	13-340-034	67	61	80.8	99.9	56.9	-	-	72.8	61.8	52.6	45.7	77.3	-	-	-	57.6	-	-	46.5	-	50.3	44.7	78.6	-
FISH & WILDLIFE SERVICE	13-340-039	68	2	96.4	100.0	89.6	-	-	94.5	92.6	90.9	85.5	93.5	-	-	-	89.9	-	-	83.6	-	81.8	63.6	94.1	-
FISH & WILDLIFE SERVICE	13-340-040	69	57	95.2	99.4	77.8	-	-	93.1	86.1	84.2	76.9	93.0	-	-	-	83.5	-	-	75.3	-	77.6	85.2	93.5	-
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-044	70	98	96.1	99.8	79.8	-	-	90.8	86.0	78.3	75.9	94.2	-	38.1	-	91.0	49.5	-	83.7	-	84.0	67.3	96.1	-
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-045	71	89	94.6	99.8	78.1	38.1	-	79.2	81.1	71.1	67.3	92.4	-	45.3	-	76.3	49.2	-	80.1	-	86.0	70.8	86.6	-
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-046	72	54	87.0	94.0	60.7	-	-	79.8	74.2	65.2	70.0	82.5	-	-	-	63.9	-	-	55.2	-	57.8	63.7	81.0	-
SAN/ SAN JOAQUIN DRAINAGE DIST	21-100-008	73	38	55.0	71.8	39.4	31.1	-	46.9	44.4	32.0	39.0	59.9	31.4	32.6	-	35.2	33.2	-	33.9	-	38.3	35.2	62.2	-
SAC/ SAN JOAQUIN DRAINAGE DIST	21-100-009	74	57	90.5	94.5	80.6	76.5	-	79.4	85.0	78.7	75.7	89.2	87.0	75.5	-	81.4	78.8	46.0	83.1	-	82.7	79.8	89.6	-
SAC/ SAN JOAQUIN DRAINAGE DIST	21-100-012	75	25	61.7	69.6	44.9	38.7	-	48.6	50.9	42.1	46.8	60.3	45.2	44.9	-	48.4	38.3	-	48.5	-	46.7	44.6	64.2	-
SAC/ SAN JOAQUIN DRAINAGE DIST	21-110-002	76	25	49.1	58.7	36.7	32.6	-	42.1	39.9	33.1	37.1	50.7	32.6	32.6	-	36.2	32.0	-	35.2	-	36.5	34.2	52.0	-
DEPT OF FISH & GAME	21-110-006	77	15	45.8	46.8	41.9	-	-	42.7	44.1	38.5	46.2	45.9	-	-	-	40.9	-	-	35.3	-	42.3	34.6	46.2	-
FISH & WILDLIFE SERVICE	21-140-001	78	77	92.9	98.7	84.0	-	-	87.6	85.4	73.6	79.1	89.3	-	32.0	-	77.1	-	-	74.6	-	72.0	71.2	87.4	48.0
FISH & WILDLIFE SERVICE	21-140-002	79	21	89.6	99.2	62.3	-	-	79.8	71.8	62.1	57.3	83.1	-	33.7	-	70.4	35.1	-	59.8	-	65.3	52.5	81.0	-
FISH & WILDLIFE SERVICE	21-140-003	80	286	86.3	99.4	64.6	-	-	75.2	70.6	65.8	56.5	84.1	-	-	-	70.0	35.4	-	60.6	-	67.0	54.2	79.9	45.7
FISH & WILDLIFE SERVICE	21-140-005	81	40	86.6	99.7	63.3	-	-	71.0	72.7	67.1	60.3	80.6	-	-	-	65.8	43.6	-	58.2	-	61.9	55.9	77.5	40.7
FISH & WILDLIFE SERVICE	21-140-008	82	58	88.7	97.7	57.5	33.4	-	69.3	72.9	59.0	54.2	83.3	33.2	36.2	-	65.4	36.1	-	64.1	-	63.2	52.8	84.0	-
FISH & WILDLIFE SERVICE	21-140-009	83	132	93.2	97.7	59.2	-	-	62.5	80.5	59.8	55.5	89.3	-	32.3	-	75.7	33.7	-	61.9	-	60.5	65.5	84.6	41.2
FISH & WILDLIFE SERVICE	21-140-010	84	27	91.9	97.8	75.8	-	-	80.3	81.0	78.9	74.8	86.8	-	38.2	-	76.3	41.3	34.1	73.8	32.5	73.1	70.1	84.2	56.6
FISH & WILDLIFE SERVICE	21-140-011	85	151	90.7	99.7	70.1	-	-	77.6	78.5	73.3	70.0	85.1	-	-	-	71.4	-	-	67.6	-	68.1	65.5	81.6	38.1
FISH & WILDLIFE SERVICE	21-140-013	86	9	86.2	99.4	51.6	-	-	55.8	68.8	53.5	50.1	81.9	-	-	-	65.3	41.5	-	54.4	-	53.7	51.0	76.8	34.2
FISH & WILDLIFE SERVICE	21-140-014	87	48	89.8	99.9	75.1	-	-	78.3	81.4	74.1	65.9	88.0	-	-	-	75.1	55.3	-	65.7	-	74.7	66.1	87.5	33.0
FISH & WILDLIFE SERVICE	21-140-015	88	7	90.8	100.0	70.9	-	-	76.9	80.5	72.0	70.1	87.0	-	-	-	77.1	-	-	70.8	-	70.6	72.2	85.3	-
FISH & WILDLIFE SERVICE	21-180-001	89	54	93.0	98.6	70.9	45.6	-	67.1	80.0	70.1	65.0	87.7	52.5	53.3	-	72.8	51.7	-	74.3	-	74.3	65.6	86.1	-
FISH & WILDLIFE SERVICE	21-180-002	90	97	94.7	98.2	78.9	-	-	83.3	87.2	81.5	78.5	91.7	-	38.4	-	84.7	32.7	36.1	77.5	40.4	77.1	83.5	90.7	50.8
FISH & WILDLIFE SERVICE	21-180-003	91	120	93.6	97.8	70.9	-	-	73.4	81.6	72.2	68.0	88.4	-	37.1	-	77.8	51.6	-	72.1	30.8	71.1	65.8	87.0	44.9
FISH & WILDLIFE SERVICE	21-180-004	92	149	91.9	99.0	66.1	48.7	-	60.0	82.0	63.7	62.2	89.4	63.3	64.2	-	78.9	61.6	-	63.0	-	64.0	65.9	83.7	34.2
FISH & WILDLIFE SERVICE	21-180-005	93	179	93.0	96.5	65.7	48.7	-	62.3	83.5	64.0	69.8	88.7	48.6	50.3	-	79.3	58.8	-	69.4	-	69.4	69.7	84.2	43.1
FISH & WILDLIFE SERVICE	21-180-006	94	20	79.9	99.3	50.0	-	-	63.1	59.8	50.6	44.7	75.7	-	-	-	52.3	34.7	-	43.0	-	46.6	40.7	73.4	-
FISH & WILDLIFE SERVICE	21-180-010	95	97	92.8	99.6	73.8	53.0	-	69.3	84.4	75.0	66.1	91.7	87.3	66.7	-	75.9	73.2	-	77.1	-	81.1	70.7	88.2	36.1
FISH & WILDLIFE SERVICE	21-180-011	96	97	94.9	97.9	78.5	54.3	-	79.5	87.9	79.3	75.2	90.2	80.7	70.4	-	80.4	79.6	30.5	77.7	38.1	82.9	80.9	91.2	54.7
FISH & WILDLIFE SERVICE	21-240-001	97	99	92.1	99.8	63.1	61.3	-	60.0	81.2	62.1	59.3	89.7	85.1	65.7	-	80.9	64.1	-	62.1	-	68.9	64.7	82.3	-
DEPT OF FISH & GAME	21-240-013	98	23	87.6	95.4	58.3	-	-	81.1	79.5	42.9	35.7	88.8	-	-	-	37.5	-	-	-	-	35.7	-	85.0	-
DEPT OF FISH & GAME	21-240-014	99	21	94.2	99.2	97.7	-	-	98.0	96.6	65.1	65.1	94.9	-	-	-	70.3	-	-	74.4	-	88.4	-	95.0	-
SAC/ SAN JOAQUIN DRAINAGE DIST	21-240-015	100	18	92.6	99.0	67.1	44.8	-	66.4	78.6	60.9	56.1	87.0	50.6	49.1	-	68.4	60.3	-	69.0	-	67.3	66.0	90.9	-
CREPS REV '05 TR ETAL	21-240-016	101	426	95.5	99.8	75.1	81.4	-	73.6	89.4	76.9	74.3	94.3	79.4	73.8	-	88.8	74.2	-	72.8	-	73.7	81.6	89.9	45.2
FISH & WILDLIFE SERVICE	21-240-023	102	101	96.2	99.8	71.3	79.3	-	71.2	89.3	76.2	70.2	94.6	86.8	79.4	-	90.0	69.7	-	72.0	-	69.0	83.4	90.1	37.7
CREPS REV '05 TR ETAL	21-240-025	103	11	95.5	99.9	84.9	65.5	-	77.8	86.9	77.1	73.6	93.1	82.1	69.6	-	82.0	76.9	-	83.0	-	83.3	77.5	93.4	50.0
CREPS REV '05 TR ETAL	21-240-028	104	19	96.1	100.0	69.2	88.1	-	72.0	89.2	73.9	66.4	96.0	96.4	67.1	-	93.8	77.3	-	70.9	-	76.8	78.8	86.4	53.6
CREPS REV '05 TR ETAL	21-240-029	105	91	95.0	99.9	79.8	78.3	-	79.2	91.3	79.0	75.0	93.0	90.8	68.9	-	87.6	82.0	-	74.6	-	80.5	80.2	90.0	44.6
CREPS REV '05 TR ETAL	21-240-030	106	8	95.6	100.0	85.3	78.9	-	79.9	91.8	84.5	78.4	95.6	87.8	70.3	-	89.0	83.4	-	78.7	-	86.0	80.9	91.7	48.8
CREPS REV '05 TR ETAL	21-240-031	107	57	94.1	99.7	77.9	84.9	-	80.7	89.3	77.5	78.5	93.5	90.9	73.2	-	90.1	82.4	-	77.6	-	84.1	80.3	87.3	51.2
CREPS REV '05 TR ETAL	21-240-032	108	5	99.2	98.4	99.0	93.9	44.4	99.4	97.4	97.9	98.6	99.1	100.0	97.4	44.4	93.4	98.9	44.4	96.0	50.0	93.5	97.9	100.0	88.9
CREPS REV '05 TR ETAL	21-240-033	109	13	97.1	98.2	85.4	90.3	-	86.5	91.8	87.3	85.3	96.6	98.2	77.0	36.4	90.6	87.1	38.2	84.0	41.8	84.2	88.7	94.8	48.5
DEPT OF FISH & GAME	21-250-009	110	44	86.6	94.3	68.9	66.6	-	69.9	78.3	67.0	65.8	84.1	77.1	61.5	-	71.7	68.2	-	67.5	-	71.8	67.9	80.5	-
SAC/ SAN JOAQUIN DRAINAGE DIST	21-250-010	111	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	21-260-003	112	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEPT OF FISH & GAME	21-260-004	113	42	96.2	99.4	91.3	88.4	-	87.2	95.3	88.2	88.5	94.7	98.5	86.9	-	92.5	90.2	-	88.3	-	93.0	89.2	93.1	-
SAC/ SAN JOAQUIN DRAINAGE DIST	21-290-001	114	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEPT OF FISH & GAME	21-290-002	115	46	94.6	98.2	86.3	75.4	-	83.5	89.7	82.8	78.2	94.3	92.2	74.2	-	85.6	85.1	-	82.6	-	86.3	81.5	93.9	-
DEPT OF FISH & GAME	21-290-003	116	33	56.4	60.0	33.3	-	-	48.2	41.4	-	30.1	58.1	-	-	-	-	-	-	-	-	39.0	-	58.8	-
DEPT OF FISH & GAME	21-290-012	117	33	53.9	59.3	42.8	36.1	-	50.5	45.9	39.0	44.0	53.0	37.4	36.9	-	42.9	35.5	-	42.3	-	42.3	39.8	54.1	-
DEPT OF FISH & GAME	21-300-001	118	34	50.5	50.0	49.7	50.0	-	50.0	49.8	50.0	49.6	49.6	50.0	49.3	-	50.0	50.0	-	49.6	-	50.0	50.0	49.6	-
SUTTER MUTUAL WATER CO	21-310-021	119	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CREPS REV '05 TR ETAL	24-070-001	120	150	97.8	97.9	76.8	92.1	-	79.5	92.3	82.7	81.2	96.2	82.8	69.9	-	95.5	80.6	-	78.4	32.0	78.2	84.0	92.3	45.0
SAC/ SAN JOAQUIN DRAINAGE DIST	24-070-009	121	9	96.3	84.9	83.6	85.6	-	79.8	94.1	81.4	80.5	95.3	85.1	76.9	-	92.6	79.4	-	74.5	-	81.1	85.9	88.8	56.8
DEPT OF FISH & GAME	24-080-006	122	7	98.6	100.0	80.0	-	-	96.3	88.4	88.3	83.3	94.6	-	-	-	88.9	-	-	70.2	-	59.7	70.8	96.3	-
CREPS REV '05 TR ETAL	24-080-007	123	237	97.9	98.0	79.0	90.6	-	84.2	92.5	86.6	84.8	94.0	74.4	64.0	-	92.7	81.1	-	78.9	36.9	78.8	87.4	92.1	55.4

Average Wet Day Depth (ft), Existing Conditions by WY

Parcel ID	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0	3.7	5.5	1.5	-	-	2.1	1.9	1.4	1.2	3.2	-	-	-	1.5	0.8	-	1.2	-	1.4	1.1	2.5	-
1	4.7	6.0	2.3	-	-	3.1	2.7	2.0	1.7	4.1	-	-	-	2.0	1.3	-	1.7	-	1.9	1.6	3.3	-
2	4.8	5.6	2.1	-	-	3.4	3.0	2.5	2.2	4.2	-	-	-	2.2	-	-	1.6	-	1.9	1.6	3.6	-
3	5.3	5.6	2.5	2.5	-	2.8	4.0	2.8	3.0	4.6	1.8	2.4	-	3.5	2.3	0.9	3.4	0.6	3.1	2.8	4.1	-
4	5.3	6.6	2.0	1.5	-	2.5	3.1	2.0	2.1	4.2	1.6	1.5	-	2.4	1.6	1.0	2.3	-	2.3	1.9	3.7	-
5	5.8	7.0	3.0	1.8	-	3.9	3.6	2.9	2.5	5.1	1.8	1.9	-	3.2	1.9	-	2.6	-	2.7	2.3	4.5	-
6	3.8	4.1	2.1	-	-	2.5	2.3	2.0	2.0	3.7	-	-	-	1.9	-	-	-	-	2.0	-	2.5	-
7	4.0	4.4	2.3	-	-	2.7	2.6	2.0	2.0	3.6	-	-	-	1.9	-	-	1.8	-	1.9	-	2.8	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	4.5	6.0	1.6	0.9	-	1.9	2.3	1.5	1.6	3.7	1.4	1.0	-	1.8	1.1	-	1.8	-	1.8	1.4	2.9	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	7.7	5.8	-	-	-	-	-	-	-	5.4	-	-	-	-	-	-	-	-	-	-	-	-
12	7.6	6.7	-	-	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-	-	-	-	-
13	4.8	4.3	-	-	-	3.9	3.6	-	-	4.6	-	-	-	-	-	-	-	-	-	-	4.1	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	4.6	6.3	1.5	0.4	-	1.6	1.9	1.3	1.1	3.6	0.8	0.5	-	1.3	0.6	-	1.3	-	1.6	0.9	2.8	-
17	4.4	5.7	1.4	-	-	2.8	2.1	1.5	1.3	3.8	-	-	-	1.4	-	-	1.1	-	1.2	1.0	2.9	-
18	4.9	5.9	2.8	-	-	3.5	3.2	2.8	2.7	4.5	-	-	-	2.7	-	-	2.5	-	2.6	2.5	3.6	-
19	5.7	7.3	2.0	-	-	3.2	2.9	1.9	1.6	5.0	-	0.4	-	2.4	0.5	-	1.8	-	1.9	1.3	4.0	-
20	6.5	8.8	1.9	0.9	-	2.5	3.3	1.8	1.9	5.0	1.1	1.0	-	2.3	1.1	0.3	2.3	-	2.5	1.6	4.1	-
21	3.3	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	3.3	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	5.1	6.0	3.2	-	-	3.8	3.5	3.2	3.0	4.7	-	-	-	3.3	2.2	-	3.0	-	3.0	3.1	3.9	-
24	6.3	6.7	4.0	-	-	4.7	4.4	3.7	3.5	6.2	-	-	-	3.7	-	-	3.3	-	3.7	-	4.7	-
25	4.0	4.6	2.0	-	-	2.4	2.3	2.0	1.7	3.6	-	-	-	1.7	-	-	1.8	-	1.9	1.3	2.5	-
26	6.0	7.3	2.3	2.2	-	2.9	3.6	2.5	2.5	5.0	1.9	2.1	-	2.9	2.2	1.4	2.7	-	2.6	2.4	4.1	-
27	7.1	6.4	2.0	2.0	0.4	2.7	4.3	2.4	2.3	5.7	0.8	1.7	-	3.4	1.6	0.8	2.6	0.6	2.8	2.0	4.8	0.4
28	6.4	7.5	4.0	-	-	4.7	4.6	4.3	3.7	5.9	-	2.8	-	4.3	3.1	-	3.8	-	3.8	3.8	5.2	-
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	5.4	6.4	2.1	1.7	-	2.4	3.2	2.1	2.1	4.4	1.5	1.7	-	2.4	1.8	1.0	2.3	-	2.4	2.1	3.6	-
34	5.6	6.8	1.8	1.2	-	2.2	3.1	1.8	1.9	4.4	1.4	1.3	-	2.2	1.4	0.7	2.1	-	2.1	1.7	3.6	-
35	4.1	5.0	2.2	-	-	2.9	2.6	2.3	2.1	3.7	-	1.5	-	2.3	1.7	-	2.1	-	2.1	2.0	3.0	-
36	6.4	8.3	2.8	1.4	-	3.0	3.5	2.7	2.5	5.5	2.3	1.6	-	2.7	1.8	-	2.8	-	2.9	2.1	4.4	-
37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	5.7	6.4	4.5	3.8	-	4.5	4.5	4.3	4.4	5.4	4.4	4.2	-	4.5	4.0	-	4.5	-	4.6	4.4	4.7	-
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	5.7	6.9	2.8	2.4	-	3.1	3.7	2.8	2.9	4.6	2.5	2.4	-	3.0	2.5	1.8	3.0	-	3.0	2.7	4.0	-
44	5.4	6.7	1.9	1.4	-	2.2	3.0	1.9	1.9	4.2	1.6	1.4	-	2.2	1.6	0.9	2.2	-	2.2	1.8	3.5	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	6.5	8.0	3.4	2.3	-	4.4	4.0	3.2	2.9	5.7	2.3	2.2	-	3.5	2.4	-	3.0	-	3.1	2.7	4.9	-
47	5.2	6.4	2.6	-	-	3.4	3.1	2.8	2.3	4.6	-	1.6	-	2.7	1.6	-	2.3	-	2.4	2.3	3.6	-
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	6.9	7.9	2.1	1.7	-	2.8	4.2	2.3	2.5	5.7	0.9	1.5	-	3.2	1.6	0.6	2.8	-	2.8	2.3	4.8	-
53	7.1	9.8	2.4	1.8	-	2.9	4.1	2.3	2.6	5.9	2.0	1.4	-	3.1	1.8	-	2.6	-	3.0	2.1	4.9	-
54	7.0	8.0	2.2	1.7	-	2.8	4.3	2.5	2.5	5.9	1.2	1.6	-	3.3	1.7	0.7	3.0	-	2.7	2.4	4.9	-
55	6.8	9.2	2.2	1.4	-	2.5	3.7	2.0	2.3	5.5	1.6	1.2	-	2.8	1.6	-	2.3	-	2.7	1.8	4.5	0.2
56	5.4	7.8	1.5	-	-	2.0	2.7	1.5	1.3	4.5	-	-	-	2.2	1.1	-	1.5	-	1.5	1.5	3.5	-
57	7.0	9.7	2.1	1.8	-	2.7	4.0	2.1	2.6	5.8	2.0	1.2	-	3.1	1.8	-	2.2	-	2.7	1.9	4.8	0.3
58	6.8	9.5	1.8	1.7	-	2.1	3.7	1.9	1.9	5.6	1.8	1.1	-	3.1	1.5	-	1.9	-	2.2	1.8	4.5	0.2
59	6.6	9.4	1.9	1.8	-	2.2	3.7	1.9	2.0	5.6	1.9	1.4	-	3.0	1.5	-	1.9	-	2.1	1.9	4.5	0.4
60	5.5	8.0	1.8	-	-	2.3	2.9	1.8	1.6	4.6	-	1.7	-	2.3	1.3	-	1.7	-	1.8	1.6	3.6	-
61	6.0	7.9	2.3	0.4	-	2.2	2.9	1.9	1.4	5.2	0.3	0.6	-	2.0	0.7	-	2.0	-	2.5	1.4	3.9	-
62	4.6	7.0	1.2	-	-	1.8	2.1	1.3	1.0	3.8	-	-	-	1.6	-	-	1.1	-	1.1	0.8	2.8	0.2
63	4.3	6.5	1.1	-	-	1.6	1.9	1.1	0.9	3.5	-	0.5	-	1.5	-	-	1.1	-	1.1	0.9	2.6	0.2
64	4.6	6.2	1.6	-	-	2.6	2.0	1.3	1.2	4.0	-	0.5	-	1.8	0.5	-	1.5	-	1.6	1.1	3.0	-
65	4.7	5.8	1.8	-	-	3.0	2.5	1.8	1.6	4.1	-	-	-	1.7	-	-	1.3	-	1.5	1.5	3.1	-
66	4.8	5.8	2.2	-	-	3.1	2.7	2.1	2.0	4.2	-	-	-	1.9	-	-	1.6	-	1.7	1.7	3.3	-
67	4.2	6.1	1.9	-	-	2.8	2.2	1.8	1.7	3.7	-	-	-	1.9	-	-	1.6	-	1.7	1.6	3.0	-
68	5.5	6.7	2.3	-	-	3.8	3.0	2.4	1.8	4.8	-	-	-	2.2	-	-	1.8	-	1.7	1.4	3.9	-
69	5.0	6.2	1.9	-	-	3.3	2.6	2.0	1.7	4.4	-	-	-	1.8	-	-	1.4	-	1.5	1.6	3.5	-
70	5.8	7.3	2.5	-	-	3.9	3.3	2.5	2.2	5.2	-	1.3	-	2.8	1.5	-	2.3	-	2.4	1.9	4.3	-
71	5.8	7.5	2.4	0.9	-	3.2	3.0	2.1	1.8	5.1	-	1.0	-	2.4	1.0	-	2.3	-	2.6	1.8	3.9	-
72	4.9	5.8	2.2	-	-	3.3	2.8	2.2	2.1	4.3	-	-	-	2.1	-	-	1.7	-	1.9	1.9	3.4	-
73	6.6	5.9	6.8	7.4	-	6.6	6.6	6.7	7.0	6.2	6.1	6.3	-	7.0	6.8	-	7.0	-	6.8	7.2	6.2	-
74	8.9	10.2	5.4	3.7	-	5.8	6.9	4.7	4.3	8.1	7.0	4.0	-	6.3	4.3	0.6	6.1	-	6.3	5.7	8.8	-
75	6.7	7.3	5.1	4.6	-	5.2	5.6	4.9	5.1	6.4	5.1	5.0	-	5.4	4.6	-	5.4	-	5.4	5.1	6.7	-
76	8.3	8.3	7.4	7.7	-	8.0	7.6	7.2	8.2	8.1	8.1	8.1	-	7.7	7.4	-	7.7	-	7.5	7.2	8.0	-
77	5.7	5.9	4.7	-	-	5.1	5.0	4.7	4.9	5.5	-	-	-	4.6	-	-	4.8	-	5.1	5.0	5.5	-
78	4.4	5.7	1.5	-	-	2.6	2.1	1.3	1.3	3.8	-	0.1	-	1.3	-	-	0.9	-	0.9	0.9	2.8	0.2
79	5.3	6.7	2.6	-	-	3.4	2.9	2.2	2.3	4.7	-	2.0	-	2.5	1.9	-	2.3	-	2.5	2.1	3.6	-
80	4.6	6.8	1.6	-	-	2.7	2.1	1.5	1.3	4.0	-	-	-	1.6	0.5	-	1.2	-	1.4	1.1	3.0	0.2
81	4.5	6.8	1.3	-	-	2.2	2.0	1.4	1.1	3.7	-	-	-	1.4	0.4	-	1.0	-	1.3	0.9	2.7	0.3
82	5.3	7.0	2.1	1.5	-	3.0	2.8	2.1	1.9	4.6	1.6	1.6	-	2.2	1.6	-	2.1	-	2.1	1.9	3.9	-
83	4.8	7.0	1.2	-	-	1.7	2.1	1.2	1.1	4.0	-	0.2	-	1.6	0.7	-	1.1	-	1.1	1.2	3.0	0.2
84	4.4	6.6	1.1	-	-	1.9	1.7	1.2	0.9	3.5	-	0.1	-	1.1	0.2	0.1	0.8	0.1	1.0	0.7	2.5	0.2
85	4.5	6.8	1.3	-	-	2.1	1.9	1.4	1.1	3.7	-	-	-	1.3	-	-	1.0	-	1.2	0.9	2.7	0.2
86	5.1	7.4	1.5	-	-	2.0	2.4	1.6	1.5	4.3	-	-	-	2.0	1.2	-	1.6	-	1.5	1.5	3.3	0.9
87	4.7	7.2	1.3	-	-	2.3	2.0	1.2	0.9	4.0	-	-	-	1.3	0.4	-	0.9	-	1.2	0.8	3.2	0.2
88	4.7	6.8	1.2	-	-	1.8	2.4	1.3	1.1	4.0	-	-	-	1.9	-	-	1.3	-	1.3	1.5	3.1	-
89	6.1	8.0	2.5	1.7	-	2.9	3.1	2.3	1.9	5.1	2.3	1.8	-	2.3	2.0	-	2.3	-	2.5	2.1	4.3	-
90	5.2	7.4	1.3	-	-	1.8	2.4	1.3	1.1	4.3	-	0.1	-	1.8	0.9	0.1	1.2	0.1	1.2	1.4	3.4	0.2
91	4.8	7.0	1.2	-	-	1.9	2.0	1.2	1.0	3.8	-	0.1	-	1.3	0.5	-	1.0	0.1	1.1	0.9	2.9	0.2
92	6.0	8.4	1.9	1.8	-	2.2	3.0	1.8	1.6	5.0	2.3	1.4	-	2.4	1.5	-	1.6	-	1.8	1.7	4.0	0.3
93	5.2	7.3	1.4	1.0	-	1.7	2.3	1.3	1.2	4.2	1.2	0.9	-	1.6	1.1	-	1.2	-	1.4	1.2	3.4	0.2
94	4.4	6.4	2.0	-	-	2.6	2.3	1.8	1.7	3.9	-	-	-	1.8	1.6	-	1.7	-	1.9	1.7	3.2	-
95	5.7	7.8	2.1	1.5	-	2.4	2.9	1.9	1.8	4.9	1.8	1.4	-	2.1	1.6	-	2.0	-	2.0	1.7	4.3	0.2
96	5.0	7.0	1.3	0.6	-	1.6	2.1	1.1	1.0	4.0	1.1	0.5	-	1.3	0.8	0.1	1.0	0.1	1.2	0.9	3.6	0.1
97	5.8	8.1	1.7	1.6	-	1.9	2.9	1.6	1.5	4.9	2.0	1.5	-	2.3	1.5	-	1.6	-	1.8	1.6	4.0	-
98	3.8	4.0	1.2	-	-	1.8	1.8	0.9	0.9	3.6	-	-	-	0.9	-	-	-	-	0.9	-	2.4	-
99	4.0	4.5	1.3	-	-	2.3	2.1	0.6	0.7	3.8	-	-	-	0.6	-	-	0.6	-	0.8	-	2.7	-
100	6.0	7.7	2.1	1.1	-	2.8	3.0	1.8	1.7	5.0	1.3	1.2	-	2.2	1.5	-	2.1	-	2.1	1.8	4.8	-
101	7.2	9.7	1.8	1.8	-	1.9	3.8	1.8	1.5	6.2	2.2	1.6	-	3.1	1.5	-	1.7	-	1.8	2.1	5.1	0.2
102	5.9	8.2	1.4	1.3	-	1.7	2.8	1.5	1.3	4.9	1.7	1.4	-	2.2	1.3	-	1.4	-	1.4	1.6	4.0	0.3
103	6.4	8.3	2.1	0.9	-	2.5	3.1	1.8	1.5	5.3	2.0	1.1	-	2.2	1.5	-	2.1	-	2.1	1.7	4.9	0.1
104	6.8	9.3	1.5	1.2	-	1.7	3.3	1.4	1.1	5.7	1.9	0.8	-	2.6	1.3	-	1.5	-	1.8	1.6	4.4	0.2
105	7.1	9.5	2.4	1.5	-	2.7	3.9	2.2	1.9	5.9	2.2	1.4	-	2.8	2.0	-	2.1	-	2.4	2.1	5.3	0.2
106	6.5	8.7	2.1	0.9	-	2.3	3.3	1.8	1.5	5.6	2.0	1.0	-	2.2	1.5	-	1.8	-	2.1	1.6	4.8	0.2
107	6.8	9.3	2.1	1.4	-	2.4	3.6	1.9	1.6	5.8	2.2	1.2	-	2.7	1.8	-	2.1	-	2.4	1.9	4.7	0.3
108	7.3	9.7	1.7	1.6	0.1	2.0	3.7	1.7	1.4	6.2	2.6	1.0	0.1	2.8	1.6	0.1	1.7	0.1	1.8	1.9	5.0	0.2
109	7.4	9.8	2.0	2.0	-	2.3	3.9	2.1	1.7	6.4	2.7	1.3	0.1	3.1	1.9	0.1	2.0	0.1	2.3	2.2	5.2	0.7
110	8.5	10.0	5.1	4.5	-	4.9	6.5	4.8	4.5	7.9	6.9	3.7	-	5.6	4.8	-	5.0	-	5.7	5.1	6.9	-
111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
113	8.7	10.9	4.8	3.0	-	4.2	5.9	3.9	3.4	7.6	6.2	3.1	-	4.6	3.8	-	4.1	-	4.9	4.4	7.3	-
114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
115	8.6	10.2	5.0	2.9	-	5.0	6.0	4.1	3.5	7.8	6.3	3.0	-	5.2	4.0	-	4.6	-	5.2	4.8	8.1	-
116	7.3	7.1	6.0	-	-	5.9	6.0	-	6.0	6.9	-	-	-	-	-	-	-	-	6.0	-	6.3	-
117	8.0	8.7	6.2	5.9	-	6.9	6.6	6.0	6.3	7.7	6.0	5.9	-	6.3	5.8	-	6.2	-	6.2	6.1	7.4	-
118	13.3	15.9	9.2	7.4	-	8.9	10.4	8.6	8.0	12.1	10.4	7.6	-	9.1	8.4	-	8.7	-	9.5	9.0	11.8	-
119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	8.1	10.2	2.1	2.3	-	2.3	4.4	2.2	1.9	6.9	2.7	1.5	-	3.8	1.8	-	1.9	0.1	2.1	2.6	5.6	0.2
121	7.4	6.5	2.5	1.7	-	2.4	4.3	2.0	1.9	6.3	2.0	1.2	-	3.2	1.6	-	1.7	-	2.5	2.4	5.0	0.2
122	4.5	5.4	1.5	-	-	2.7	2.0	1.1	1.1	3.9	-	-	-	1.1	-	-	0.7	-	0.7	0.7	3.2	-
123	8.2	10.4	2.1	2.5	-	2.4	4.5	2.4	2.1	6.8	3.0	1.6	-	3.8	1.8	-	1.9	0.1	2.0	2.7	5.7	0.2

Change in Depth (Project - Existing) During Wet Days (ft), by WY; Avg. Wet Day Inundated Area (%); Avg. Wet Day Depth (ft); Avg. Change in Depth During Wet

Parcel ID	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg. Wet Day Inundated Area (%)	Avg. Wet Day Depth (ft)	Avg. Change in Depth During Wet
0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	63.8	2.5	0.0
1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	78.8	3.5	0.0
2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	68.6	3.8	0.0
3	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	51.0	3.6	0.0
4	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	55.5	3.2	0.0
5	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	69.9	4.3	0.0
6	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	-	-	0.0	-	0.0	-	72.5	3.3	0.0
7	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	-	0.0	-	69.9	3.4	0.0
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	69.0	2.6	0.0
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	100.0	6.3	0.0
12	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	66.7	6.8	0.0
13	0.0	0.0	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	44.9	4.4	0.0
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	75.0	2.5	0.0
17	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	81.7	3.2	0.0
18	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	77.1	4.1	0.0
19	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	-0.2	0.0	-	94.4	4.0	0.0
20	-0.1	0.0	-0.1	0.0	-	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	-	0.0	0.0	0.1	0.0	-	0.0	0.0	0.0	-	88.3	3.5	0.0
21	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44.3	2.7	0.0
22	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44.3	2.7	0.0
23	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	65.6	4.3	0.0
24	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	-	0.0	-	51.6	5.6	0.0
25	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	72.2	3.3	0.0
26	0.0	0.0	-0.1	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	65.3	3.7	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.2	3.6	0.0
28	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	59.0	5.4	0.0
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	72.5	3.2	0.0
34	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	87.9	3.1	0.0
35	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	64.1	3.3	0.0
36	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	82.6	4.0	0.0
37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	64.2	5.0	0.0
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	69.5	3.8	0.0
44	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	75.8	3.1	0.0
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	93.4	4.9	0.0
47	0.0	0.0	0.0	-	-	0.0	0.0	-0.1	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	75.6	4.0	0.0
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-0.1	0.0	-	96.5	3.9	0.0
53	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	93.8	4.1	0.0
54	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	94.6	4.0	0.0
55	-0.1	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	90.2	3.8	0.0
56	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	80.5	2.8	0.0
57	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-0.1	0.0	94.4	3.9	0.0
58	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	83.6	3.4	0.0
59	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-0.1	0.0	76.0	3.4	0.0
60	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	65.9	3.0	0.0
61	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-	0.0	-0.1	-	0.0	-	0.0	0.0	-0.1	-	87.2	3.5	0.0
62	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	0.0	81.9	2.5	0.0
63	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	-	-	0.0	-	0.0	0.0	0.0	0.0	70.3	2.3	0.0
64	-0.1	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	78.2	3.0	0.0
65	0.0	0.0	0.0	-	-	0.0	-0.1	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	88.4	3.5	0.0
66	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	88.1	3.7	0.0
67	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	69.1	3.0	0.0
68	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	93.0	4.2	0.0
69	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	-0.4	0.0	-	90.7	3.8	0.0
70	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	90.1	4.4	0.0
71	0.0	0.0	0.0	0.0	-	-0.2	0.0	-0.1	0.0	-0.1	-	0.0	-	0.0	0.0	-	0.0	-	-0.1	0.0	0.0	-	82.1	3.8	0.0
72	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	79.2	3.8	0.0
73	-0.1	0.0	-0.1	-0.1	-	-0.2	0.0	0.1	-0.1	-0.1	0.2	0.0	-	-0.2	0.1	-	-0.1	-	0.0	-0.4	0.0	-	52.9	6.5	-0.1
74	-0.4	-0.1	-0.7	0.2	-	-1.7	-0.6	-1.0	-0.6	-0.2	0.2	-0.7	-	-1.3	-0.6	1.6	-0.8	-	-1.1	-1.1	-1.5	-	85.0	7.0	-0.8
75	-0.1	-0.1	0.0	-0.1	-	0.2	-0.1	0.2	0.1	-0.1	0.1	-0.4	-	0.1	-0.1	-	0.1	-	-0.2	0.0	0.1	-	55.1	6.0	0.0
76	0.0	0.0	0.2	-0.8	-	0.1	0.1	0.2	-0.1	0.0	0.2	0.2	-	0.2	-0.3	-	0.2	-	0.0	0.2	0.0	-	46.3	7.9	0.0
77	0.0	0.1	0.0	-	-	0.0	0.1	0.0	0.1	0.1	-	-	-	-0.1	-	-	-0.1	-	-0.1	-0.4	0.0	-	45.2	5.5	0.0
78	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	-	-	0.0	-	0.0	0.0	0.0	0.0	86.8	3.1	0.0
79	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.1	-	-0.1	0.0	-	0.0	-	0.0	0.0	0.0	-	77.2	3.9	0.0
80	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.1	-	0.0	-	0.0	0.0	0.0	0.0	76.5	3.1	0.0
81	0.0	0.0	0.0	-	-	0.0	0.0	-0.1	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	73.3	2.7	0.0
82	-0.1	0.0	0.0	-0.1	-	-0.1	-0.1	-0.1	0.1	-0.2	0.0	-0.1	-	-0.2	0.0	-	-0.1	-	0.0	-0.1	-0.2	-	73.3	3.6	-0.1
83	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	-0.1	-	0.0	-	0.0	0.0	0.0	0.0	73.1	2.4	0.0
84	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.0	2.3	0.0
85	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	0.0	79.0	2.6	0.0
86	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	65.4	2.8	0.0
87	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	81.4	2.8	0.0
88	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	79.0	2.5	0.0
89	-0.3	0.0	-0.2	0.1	-	-0.1	0.0	0.0	0.1	-0.3	0.0	0.0	-	0.1	0.1	-	0.0	-	0.0	0.0	-0.2	-	77.4	3.7	-0.1
90	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.1	2.5	0.0
91	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.1	-	0.0	0.0	0.0	0.0	0.0	0.0	79.5	2.5	0.0
92	0.1	0.0	0.0	0.0	-	-0.1	0.1	0.1	0.0	0.1	0.0	0.1	-	0.1	0.0	-	0.0	-	0.0	0.1	0.0	0.0	73.7	3.1	0.0
93	0.0	0.0	0.0	0.1	-	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-	0.0	0.0	-	0.0	-	0.0	0.0	-0.1	0.0	75.7	2.6	0.0
94	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-0.2	-	0.0	-	0.0	0.0	0.0	-	65.2	3.1	0.0
95	-0.1	0.0	0.0	0.1	-	0.0	0.0	0.0	-0.1	-0.2	0.0	0.0	-	0.1	0.1	-	0.0	-	0.0	0.1	-0.2	0.0	81.0	3.4	0.0
96	0.0	0.0	-0.1	0.1	-	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-	0.1	0.0	0.0	0.0	0.0	0.1	0.0	-0.3	0.0	84.0	2.5	0.0
97	0.1	0.0	0.1	0.2	-	0.0	0.1	0.1	0.0	0.0	0.0	0.1	-	0.1	0.1	-	0.0	-	0.0	0.0	0.0	-	73.7	3.0	0.1
98	-0.1	-0.1	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	-	-	0.0	-	-	-	-	0.0	-	0.0	-	85.5	3.1	0.0
99	-0.1	-0.1	0.0	-	-	0.0	0.0	0.1	0.0	-0.1	-	-	-	0.1	-	-	0.0	-	0.0	-	0.0	-	94.1	3.3	-0.1
100	-0.3	0.0	-0.2	0.1	-	-0.4	-0.1	0.0	0.0	-0.3	0.1	0.1	-	0.0	0.0	-	0.0	-	0.0	-0.2	-0.7	-	76.0	3.6	-0.2
101	0.1	0.0	0.0	0.2	-	0.1	0.1	0.1	0.2	0.1	0.1	-0.3	-	0.2	0.1	-	0.0	-	0.0	0.1	-0.1	0.0	82.0	3.4	0.1
102	0.0	0.0	0.1	0.1	-	0.1	0.0	0.0	0.0	0.1	0.2	0.0	-	0.1	0.0	-	0.0	-	0.0	0.0	0.0	0.0	80.7	2.7	0.0
103	-0.3	0.0	-0.1	0.2	-	-0.2	0.1	0.1	0.0	-0.3	0.1	0.0	-	0.1	0.1	-	0.0	-	0.1	0.1	-0.4	0.0	85.6	3.6	-0.1
104	0.1	0.0	0.1	0.3	-	0.1	0.1	0.1	0.1	0.0	0.2	0.0	-	0.1	0.0	-	0.1	-	0.1	0.1	0.1	0.0	81.2	3.1	0.1
105	-0.1	0.0	-0.2	0.3	-	0.0	0.0	0.0	0.1	0.1	0.1	0.0	-	0.1	0.1	-	0.1	-	0.1	0.0	-0.4	0.0	85.3	4.0	0.0
106	-0.1	0.0	-0.1	0.2	-	0.0	0.1	0.1	0.1	-0.3	0.0	0.1	-	0.1	0.0	-	0.0	-	0.1	0.1	-0.3	0.0	87.7	3.6	-0.1
107	0.1	0.0	-0.2	0.3	-	0.0	0.0	0.0	0.1	0.0	0.0	0.1	-	0.2	0.0	-	0.0	-	0.0	0.1	-0.1	0.0	85.5	3.7	0.0
108	0.1	0.0	0.1	0.3	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.2	0.1	0.0	97.5	3.3	0.1
109	0.1	0.0	0.2	0.3	-	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.2	0.1	0.0	88.9	3.6	0.1
110	0.3	-0.5	0.2	0.8	-	0.1	0.1	0.2	0.4	0.2	0.1	0.5	-	0.4	0.2	-	0.2	-	0.0	0.0	0.4	-	75.6	6.3	0.2
111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
113	0.1	-0.5	-0.6	1.0	-	0.0	0.1	-0.1	0.4	0.3	0.1	0.1	-	0.3	0.0	-	0.4	-	-0.1	-0.2	-0.2	-	92.4	6.0	0.0
114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
115	-0.2	-0.1	-0.8	0.6	-	-1.1	-0.3	-0.7	-0.1	-0.3	0.2	0.0	-	-0.7	-0.5	-	0.2	-	-0.5	-0.7	-1.1	-	88.7	6.4	-0.5
116	0.0	0.0	0.2	-	-	-0.1	0.0	-	0.2	0.0	-	-	-	-	-	-	-	-	-0.1	-	0.0	-	55.9	6.8	0.0
117	0.0	0.0	0.1	0.1	-	0.1	0.0	0.1	0.1	0.0	0.1	0.1	-	0.0	0.1	-	0.1	-	0.0	0.0	0.0	-	49.5	7.2	0.0
118	-0.1	-0.8	-0.3	1.0	-	0.1	0.2	-0.2	0.4	0.4	0.2	0.1	-	0.3	0.2	-	0.2	-	-0.2	-0.4	-0.2	-	49.9	10.5	0.0
119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	0.1	0.0	0.1	0.4	-	0.1	0.2	0.2	0.2	0.2	0.1	0.1	-	0.2	0.1	-	0.1	0.0	0.1	0.2	0.2	0.0	85.2	3.7	0.1
121	0.1	-0.1	0.0	0.4	-	0.1	0.1	0.3	0.2	0.2	0.3	0.2	-	0.2	0.2	-	0.1	-	-0.1	0.1	0.2	0.0	85.9	3.8	0.1
122	-0.1	0.0	-0.1	-	-	0.0	0.1	0.0	0.1	0.0	-	-	-	0.0	-	-	0.0	-	-0.1	-0.1	-0.1	-	93.1	3.4	0.0
123	0.1	-0.3	0.1	0.4	-	0.1	0.2	0.2	0.2	0.2	0.0	0.2	-	0.2	0.1	-	0.1	0.0	0.1	0.1	0.1	0.0	85.8	3.7	0.1

Waterfowl Season Summary WYs 1997-2018

Average Wet Day Inundated Area (%), Existing Conditions by WY

Owner	APN	Parcel ID	Parcel Area	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
DEPT OF FISH & GAME	24-080-010	124	38	92.4	98.3	68.6	37.2	-	85.3	75.3	65.7	75.6	89.0	38.9	38.9	-	68.3	47.5	-	69.6	-	74.2	60.0	91.0	-
DEPT OF FISH & GAME	24-110-007	125	23	95.6	99.9	87.2	80.3	-	82.6	93.7	87.5	83.5	93.8	92.0	85.1	-	88.7	86.3	-	88.3	-	89.5	87.2	93.3	-
TJ HOLDINGS LP	24-120-001	126	150	97.9	79.7	78.9	87.2	-	77.9	92.8	82.8	80.9	96.3	66.4	76.2	-	93.7	79.9	-	74.7	37.4	81.5	86.3	91.9	46.4
TJ HOLDINGS LP	24-120-002	127	72	97.9	75.2	76.0	85.7	36.1	72.9	91.4	73.6	70.4	95.4	53.4	75.8	-	87.9	70.5	47.8	71.8	44.1	66.2	74.1	90.2	46.1
DEPT OF FISH & GAME	24-120-003	128	31	97.3	100.0	91.9	86.3	-	87.3	95.4	90.8	85.0	93.7	89.1	87.3	-	90.9	92.6	-	88.3	-	92.4	89.5	92.3	-
SAC/ SAN JOAQUIN DRAINAGE DIST	24-120-010	129	32	96.4	100.0	87.3	76.4	-	81.5	92.9	84.1	77.0	92.6	84.1	79.9	-	86.3	88.4	-	84.1	-	89.4	85.3	90.8	-
SAC/ SAN JOAQUIN DRAINAGE DIST	24-120-013	130	2	99.4	100.0	89.4	56.9	-	82.5	93.8	87.1	76.7	97.1	100.0	71.2	-	83.3	88.2	-	95.1	-	91.7	91.7	97.3	-
TJ HOLDINGS LP	24-120-017	131	276	96.9	100.0	79.9	89.9	-	78.7	92.9	76.4	76.6	95.9	98.8	74.3	-	93.6	83.6	-	77.1	-	81.4	81.1	86.8	-
SAC/ SAN JOAQUIN DRAINAGE DIST	24-120-018	132	23	97.1	88.0	79.9	84.8	-	78.0	93.9	79.2	81.4	95.8	88.1	72.6	-	91.7	75.0	34.7	78.6	-	88.3	85.9	91.4	-
DEPT OF FISH & GAME	24-130-002	133	71	98.2	100.0	93.5	86.2	-	88.0	96.9	90.0	89.6	93.0	100.0	88.6	-	94.2	93.5	-	92.1	-	92.5	91.8	92.2	-
TJ HOLDINGS LP	24-130-018	134	3	100.0	100.0	95.4	91.7	-	98.2	97.8	92.1	90.0	98.7	100.0	88.1	-	97.6	92.2	-	96.4	-	92.2	97.0	99.4	-
SAC/ SAN JOAQUIN DRAINAGE DIST	24-130-019	135	15	93.8	72.1	62.4	58.1	-	56.5	87.2	62.5	58.6	90.7	57.1	56.3	-	81.1	55.7	32.5	53.6	-	51.2	67.3	80.2	31.3
TJ HOLDINGS LP	24-130-023	136	185	99.3	100.0	83.0	96.7	-	82.9	95.4	84.6	84.5	98.9	100.0	85.3	-	98.1	81.4	-	80.0	-	76.7	91.4	95.0	38.6
TJ HOLDINGS LP	24-130-029	137	155	98.9	100.0	81.9	96.5	-	82.0	94.8	83.2	83.8	98.5	100.0	73.6	-	97.8	81.8	-	79.8	-	78.1	90.1	92.9	41.2
DE WIT FARMS INC	24-130-030	138	57	98.8	98.1	91.3	91.3	-	90.1	94.8	92.9	92.3	96.2	100.0	84.1	30.3	94.2	89.4	31.5	88.0	37.1	85.8	94.4	95.6	61.4
SAC/ SAN JOAQUIN DRAINAGE DIST	24-130-031	139	23	96.8	100.0	70.9	87.0	-	72.4	91.8	70.3	71.0	94.3	100.0	61.5	-	92.4	81.0	-	72.1	-	79.4	75.0	84.8	-
DEPT OF FISH & GAME	24-180-006	140	12	99.3	100.0	87.3	70.0	-	88.2	94.7	88.0	81.7	97.3	100.0	73.3	-	90.0	88.8	-	94.1	-	90.0	92.7	97.7	-
DE WIT FARMS LLC	24-180-013	141	3	98.4	100.0	87.9	59.3	-	78.7	93.8	89.1	75.9	96.6	100.0	80.9	-	83.5	90.6	-	90.5	-	95.0	90.8	96.2	-
SAC/ SAN JOAQUIN DRAINAGE DIST	24-180-014	142	5	95.0	99.6	83.3	58.5	-	79.3	89.8	85.3	71.0	95.5	94.4	74.2	-	81.4	84.9	-	88.3	-	86.1	84.1	94.2	-
DEPT OF FISH & GAME	25-130-016	143	43	95.8	100.0	87.9	79.5	-	83.2	95.5	86.8	82.7	92.1	100.0	85.5	-	88.0	91.9	-	85.5	-	93.6	86.1	91.5	-
DNH FARMS GP	25-130-019	144	239	98.8	99.9	84.4	89.5	-	82.0	94.2	84.8	81.1	98.1	98.4	89.3	-	95.9	85.5	-	82.2	35.3	81.0	89.9	93.8	43.3
SUTTER BASIN CORP LTD	25-130-020	145	8	97.8	100.0	92.9	90.5	-	90.0	98.0	92.6	89.4	94.9	100.0	91.3	-	92.3	92.5	-	90.0	-	97.0	89.9	93.8	-
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-029	146	42	93.0	76.9	68.3	59.9	-	61.7	86.4	63.5	62.1	89.2	58.2	52.7	-	78.4	59.7	31.0	58.4	-	76.2	70.8	81.0	-
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-030	147	8	94.6	100.0	82.5	66.7	-	71.5	91.8	79.0	73.6	90.8	100.0	81.0	-	82.0	84.7	-	83.1	-	88.4	80.5	87.3	-
DNH FARMS GP	25-130-035	148	172	98.4	98.3	89.3	90.4	-	88.8	95.2	91.5	92.2	96.6	100.0	79.7	39.6	94.8	88.5	34.0	85.0	49.3	80.3	94.7	96.1	50.4
DNH FARMS GP	25-130-036	149	25	97.9	99.9	85.3	87.5	-	81.6	94.1	84.6	80.4	96.9	100.0	87.5	-	93.1	85.6	-	85.1	-	84.4	88.0	92.7	-
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-045	150	59	96.9	100.0	86.1	85.3	-	83.0	95.7	84.1	81.3	93.9	99.2	76.5	-	90.5	87.0	-	85.3	-	89.4	86.6	90.0	-
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-047	151	40	95.7	71.6	68.6	71.0	35.8	64.8	87.7	66.7	62.8	89.5	47.7	66.5	-	82.0	64.6	43.8	64.7	38.7	61.0	67.3	85.3	42.2
DE WIT FARMS LLC	25-130-048	152	25	97.9	100.0	83.8	90.4	-	82.1	94.0	85.7	84.9	97.0	100.0	79.6	-	94.1	82.4	-	80.7	-	79.8	88.8	92.9	42.6
DE WIT FARMS LLC	25-130-049	153	125	98.6	100.0	89.7	93.6	-	88.5	95.8	90.7	90.7	98.2	99.8	77.0	-	96.3	87.7	-	87.6	-	85.9	93.2	93.9	49.7
SUTTER BASIN CORP LTD	25-200-003	154	6	100.0	100.0	100.0	100.0	-	100.0	100.0	97.7	100.0	99.5	100.0	100.0	-	100.0	98.9	-	99.0	-	100.0	98.5	99.5	-
SUTTER BASIN CORP LTD	25-200-008	155	103	99.3	100.0	93.0	96.2	-	93.1	98.6	90.7	90.3	97.8	66.7	82.9	-	97.1	94.7	-	92.9	-	94.8	91.3	95.6	-
DNH FARMS GP	25-200-026	156	1	97.7	94.3	80.8	86.8	-	79.5	94.3	78.0	80.4	93.5	75.0	73.9	-	91.7	82.1	-	79.7	-	86.4	84.2	87.5	-
DNH FARMS GP	25-200-027	157	15	96.8	99.6	79.7	77.4	-	75.5	91.1	78.4	73.3	95.0	100.0	80.7	-	88.8	82.6	-	79.7	-	81.6	82.2	91.3	-
DNH FARMS GP	25-200-030	158	127	98.9	98.3	88.7	83.6	-	87.5	94.5	85.8	85.2	94.5	100.0	82.6	42.1	92.8	88.0	36.4	85.5	41.5	79.6	93.6	96.0	57.4
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-031	159	54	93.9	71.2	63.0	58.8	30.2	59.7	84.1	63.8	55.5	89.5	44.8	56.3	-	78.6	59.3	39.0	59.6	32.8	56.0	64.1	82.2	36.1
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-032	160	42	97.0	99.8	80.5	72.8	-	77.3	92.7	79.5	76.6	93.2	68.2	68.0	-	86.7	85.3	-	81.5	-	87.8	83.5	89.6	-
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-038	161	18	95.6	100.0	85.6	72.1	-	73.3	92.7	79.1	76.4	91.3	100.0	83.9	-	83.9	85.8	-	84.3	-	89.7	84.7	88.3	-
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-039	162	7	96.1	79.0	75.4	74.7	-	70.3	92.0	73.5	73.0	93.0	71.7	68.1	-	87.1	70.0	36.7	65.9	-	85.4	81.0	84.6	-
PERRY FAM REV '03 TR	25-200-042	163	305	99.0	99.9	87.5	92.8	-	87.0	97.0	90.9	84.4	98.3	99.9	89.3	-	96.4	86.6	-	87.0	31.7	82.3	93.8	95.2	45.7
NORDIC INDUSTRIES INC/ ETAL	25-200-043	164	408	98.5	99.2	78.3	84.3	-	71.7	91.9	74.2	75.0	95.9	99.1	86.5	-	92.8	79.7	-	75.9	-	76.5	83.3	88.3	51.7
NORDIC INDUSTRIES INC/ ETAL	25-210-007	165	56	96.5	100.0	88.5	80.2	-	93.4	95.4	91.9	88.3	97.5	93.9	79.9	-	91.4	90.7	-	94.5	-	94.0	88.8	98.7	-
SAC/ SAN JOAQUIN DRAINAGE DIST	25-210-009	166	12	93.3	98.2	68.6	43.0	-	68.8	80.3	65.7	57.2	89.9	52.8	49.2	-	69.3	59.5	-	74.2	-	80.2	67.2	91.9	-
ODYSSEUS FARMS PTN	25-270-007	167	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GARWOOD RANCH INC	25-270-011	168	64	74.4	39.4	-	-	-	-	-	-	-	74.6	-	-	-	-	-	-	-	-	-	-	76.0	-
SAC/ SAN JOAQUIN DRAINAGE DIST	25-270-012	169	11	79.3	76.3	67.0	-	-	61.9	60.8	56.8	48.9	74.2	-	-	-	48.9	-	-	47.7	-	44.3	-	76.1	-
DEPT OF FISH & GAME	25-270-013	170	130	75.0	59.0	52.3	-	-	39.8	38.7	-	-	68.3	-	-	-	-	-	-	-	-	-	-	73.9	-
DEPT OF FISH & GAME	25-280-009	171	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEPT OF FISH & GAME	25-290-006	172	307	71.8	75.8	-	-	-	-	-	-	-	77.5	-	-	-	-	-	-	-	-	-	-	75.1	-
ODYSSEUS FARMS PTN	25-290-008	173	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	25-300-002	174	6	74.8	65.4	-	-	-	-	-	-	-	82.9	-	-	-	-	-	-	-	-	-	-	82.6	-
DEPT OF FISH & GAME	25-300-003	175	115	83.9	-	-	-	-	-	-	-	-	77.9	-	-	-	-	-	-	-	-	-	-	75.3	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-003	176	82	98.8	99.7	91.0	82.4	-	85.0	96.8	84.7	84.1	94.7	99.1	90.0	-	90.8	91.2	-	89.3	-	94.5	89.6	91.4	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-006	177	17	94.8	98.0	79.2	46.1	-	74.4	86.8	77.4	63.0	94.0	71.4	60.6	-	79.1	80.5	-	84.1	-	80.2	77.6	92.6	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-007	178	17	96.4	99.0	86.4	68.4	-	77.0	93.1	84.8	80.7	92.7	98.6	78.6	-	86.2	87.5	-	84.8	-	90.2	85.3	92.4	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-008	179	13	90.4	98.2	66.9	48.1	-	63.3	81.2	64.3	56.9	84.7	62.3	50.9	-	68.5	63.6	-	68.0	-	72.4	63.8	82.5	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-009	180	34	86.8	95.6	55.2	-	-	73.2	65.1	57.5	57.3	82.8	-	30.9	-	59.1	37.6	-	53.7	-	52.1	45.0	83.9	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-010	181	1	66.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-012	182	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-014	183	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-017	184	16	91.0	71.7	57.3	44.2	-	54.1	78.1	53.6	50.2	86.2	46.2	44.7	-	71.1	50.8	31.1	52.8	-	65.0	60.2	78.4	30.8
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-020	185	33	68.3	72.6	56.0	-	-	58.6	52.6	42.2	47.0	64.6	-	-	-	46.8	-	-	41.5	-	42.2	36.6	63.9	-
MONTNA A&G PROPERTIES LP	29-210-022	186	461	90.8	97.8	67.6	45.4	-	80.8	75.1	66.3	62.0	86.2	34.1	44.1	-	71.9	52.5	-	67.3	-	73.2	59.3	90.3	-
NORDIC INDUSTRIES INC/ ETAL	29-210-023	187	164	96.0	100.0	86.5	71.3	-	89.5	95.0	88.7	84.6	97.8	89.5	69.2	-	88.6	91.3	-	91.0	-	91.8	84.0	97.0	51.8
NORDIC INDUSTRIES INC/ ETAL	29-210-024	188	344	96.2	97.8	71.0	70.9	-	69.1	85.6	79.4	71.0	92.5	92.8	73.6	-	84.0	75.3	-	67.1	-	73.5	69.4	86.9	38.0
SUTTER BASIN CORP LTD	29-230-004	189	44	92.1	99.1	65.6	43.8	-	73.0	73.5	60.6	58.8	90.9	40.3	40.5	-	67.5	65.4	-	71.6	-	65.8	56.3	92.0	-
SUTTER BASIN CORP LTD	29-230-006	190	53	95.3	98.0	68.3	42.3	-	56.7	73.4	55.8	51.2	87.1	45.1	44.7	-	63.8	70.7	-	66.3	-	67.5	56.1	83.1	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-007	191	188	99.4	99.6	76.3	84.4	-	71.8	89.4	72.1	69.7	96.6	88.1	64.2	-	91.5	80.9	-	75.2	-	79.9	77.2	89.9	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-008	192	607	64.1	69.7	39.0	-	-	46.5	42.8	34.5	30.9	59.5	-	-	-	34.2	30.8	-	34.5	-	32.1	-	61.9	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-230-009	193	1	88.3	98.3	64.3	44.4	-	80.8	71.7	63.3	60.4	84.8	50.0	45.8	-	65.5	60.4	-	65.6	-	66.7	61.1	87.6	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-230-010	194	30	67.6	68.7	-	-	-	-	-	-	-	72.4	-	-	-	-	-	-	-	-	-	-	72.5	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	195	596	73.3	79.9	43.0	-	-	57.9	49.2	44.3	43.9	68.5	-	-	-	44.6	35.6	-	41.9	-	39.7	37.1	71.0	-
GOOSE CLUB FARMS NORTH LLC ET	29-230-012	196	48	60.3	54.9	-	-	-	-	-	-	-	62.1	-	-	-	-	-	-	-	-	-	-	51.9	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-230-013	197	9	87.8	92.7	67.7	45.2	-	61.5	74.5	66.1	57.8	82.8	64.9	52.5	-	67.6	65.7	-	65.9	-	69.8	62.5	82.5	-
MONTNA A&G PROPERTIES LP	29-230-014	198	33	86.6	94.4	64.4	45.1	-	77.1	72.9	64.7	64.1	84.6	30.3	45.5	-	65.6	58.8	-	68.4	-	71.8	60.3	86.7	-
SUTTER BASIN CORP LTD	29-250-001	199	53	96.7	77.8	87.3	85.3	37.5	79.2	94.5	79.4	75.3	94.4	51.4	85.1	33.7	88.0	79.6	52.5	79.9	41.0	71.3	75.4	92.4	50.2
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	200	643	90.5	93.9	66.7	56.8	-	61.4	71.1	59.7	57.5	84.2	57.8	58.0	-	66.4	68.0	-	63.8	-	65.4	60.8	81.3	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	201	2	85.7	-	-	-	-	-	-	-	-	42.9	-	-	-	-	-	-	-	-	-	-	42.9	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	202	260	63.2	58.0	-	-	-	32.0	-	-	-	63.1	-	-	-	-	-	-	-	-	-	-	59.9	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	203	21	66.4	-	-	-	-	-	-	-	-	44.4	-	-	-	-	-	-	-	-	-	-	39.3	-
SUTTER BASIN CORP LTD	29-250-004	204	13	98.8	80.2	82.5	90.0	-	80.5	95.3	79.6	80.6	97.5	65.0	74.3	-	93.1	80.0	35.0	76.9	-	82.9	85.2	92.0	-
SUTTER BASIN CORP LTD	29-250-005	205	38	99.2	77.7	87.4	95.4	-	81.0	97.0	85.1	85.1	99.0	76.5	83.5	-	98.0	75.6	40.4	74.1	-	61.3	89.9	95.9	31.4
GOOSE CLUB FARMS NORTH LLC ET	29-250-006	206	306	99.3	79.3	89.5	89.2	-	82.3	96.6	85.3	85.2	99.0	62.7	85.2	-	97.6	78.7	46.5	74.1	-	62.6	85.2	96.5	35.8
GOOSE CLUB FARMS NORTH LLC ET	29-250-007	207	215	78.1	81.6	58.3	43.8	-	52.6	57.7	52.7	48.7	72.1	44.6	48.3	-	53.7	56.8	-	54.7	-	53.6	49.8	71.9	-
GOOSE CLUB FARMS NORTH LLC ET	29-250-008	208	8	78.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	29-260-013	209	16	78.2	-	-	-	-	-	-	-	-	44.9	-	-	-	-	-	-	-	-	-	-	36.8	-
	29-260-014	210	19	89.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	211	491	93.3	94.3	69.4	67.4	-	64.6	77.6	61.4	61.1	89.1	69.6	55.2	-	76.7	69.4	-	68.2	-	69.9	66.6	82.8	-
GOOSE CLUB FARMS NORTH LLC ET	34-100-007	212	223	97.8	87.5	92.9	95.2	50.9	88.9	98.6	93.3	85.1	94.8	59.6	89.5	-	99.9	89.2	68.9	90.5	-	86.1	89.4	99.8	57.7
GOOSE CLUB FARMS NORTH LLC ET	34-110-025	213	173	98.1	98.2	92.3	84.2	71.9	93.6	99.5	98.3	92.5	94.1	68.9	89.4	72.5	92.9	93.3	91.9	96.7	89.7	97.0	96.6	96.6	78.7
GENERATIONS FARMLAND LLC	34-110-026	214	22	78.1	74.6	74.8	59.4	49.6	78.2	88.7	77.7	67.9	73.0	57.2	63.5	46.5	61.2	71.6	52.2	75.8	45.2	83.6	76.5	83.2	55.1
GOOSE CLUB FARMS NORTH LLC	34-120-016	215	351	93.5	65.7	69.8	73.8	-	62.0	83.9	61.6	61.0	90.6	40.0	58.7	-	84.2	60.5	32.5	57.3	-	51.1	67.9	84.6	31.7
GENERATIONS FARMLAND LLC	34-120-017	216	180	90.9	71.9	68.6	71.1	-	63.7	80.0	64.4	63.9	87.3	54.3	58.9	-	77.7	66.6	32.1	60.7	-	68.4	70.6	81.6	-
GENERATIONS FARMLAND LLC	34-150-001	217	733	95.0	73.7	75.1	78.3	-	68.5	87.0	71.3	70.8	92.4	58.6	65.5	-	84.9	71.9	33.4	65.2	-	71.9	77.8	86.8	-
GALLOWAY CHRISTOPHER J	34-170-020	218	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GALLOWAY CHRISTOPHER J	34-170-021	219	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GENERATIONS FARMLAND LLC	34-170-022	220	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GENERATIONS FARMLAND LLC	34-180-001	221	456	99.8	92.4	84.5	90.5	-	84.6	95.6	79.4	82.9	98.4	92.1	72.5	-	92.8	84.3	-	84.6	-	87.2	89.7	94.4	32.0
GENERATIONS FARMLAND LLC	34-180-003	222	159	93.4	95.2	77.7	52.6	-	65.2	76.5	70.7	62.8	88.2	49.4	63.7	-	71.7	77.8	-	72.4	-	71.6	65.9	87.9	-
GENERATIONS FARMLAND LLC	34-180-004	223	17	98.8	99.3	87.4	63.9	-	76.8	85.3	77.6	72.2	94.9	68.8	68.9	-	80.2	90.5	-	82.5	-	83.7	75.7	92.0	-
R & J FARMS INC	34-210-004	224	83	97.8	99.6	92.8	-	-	92.8	85.4	87.7	89.1	98.1	-	-	-	95.4	94.0	-	97.5	-	87.4	75.4	99.1	-
DEFTY FAM '05 TR ETAL	34-210-006	225	91	96.0	97.5	85.4	43.7	-	89.6	81.7	68.3	75.5	93.9	-	43.0	-	78.2	89.0	-	83.1	-	80.4	68.3	94.2	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-210-007	226	2	59.5	47.6	38.3	33.3	33.3	36.7	40.0	34.8	33.8	51.6	33.3	33.3	33.3	34.9	36.2	33.3	36.5	33.3	34.5	33.9	51.7	33.3
SAC/ SAN JOAQUIN DRAINAGE DIST	34-210-008	227	4	91.3	93.6	68.1	-	-	74.2	77.8	66.7	-	88.5	-	-	-	62.2	53.3	-	64.4	-	-	-	92.0	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-210-009	228	5	61.6	52.6	50.4	42.9	40.3	46.2	48.4	46.5	43.6	56.0	40.7	42.2	35.8	40.6	46.2	41.2	45.6	35.6	40.6	40.7	57.3	40.9
SAC/ SAN JOAQUIN DRAINAGE DIST	34-210-010	229	70	96.0	98.2	82.3	38.8	-	86.5	79.7	66.1	73.9	95.4	-	37.8	-	79.3	85.2	-	84.0	-	78.1	68.3	95.3	-
PETERS LAURA H	34-210-011	230	64	97.4	99.7	83.9	-	-	84.7	74.8	66.3	69.6	96.3	-	38.5	-	78.9	86.1	-	90.3	-	75.6	59.0	96.7	-
PETERS LAURA H	34-210-012	231	487	97.6	98.4	81.8	46.5	-	64.6	81.2	72.9	60.7	92.3	42.1	56.2	-	72.2	83.2	-	77.1	-	73.0	66.9	88.2	-
GIUSTI RICHARD/ SANDRA TR ETAL	34-220-015	232	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WHITE RALPH/ MILDREDRED '91 TR	34-220-016	233	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FAIRLEE TR	34-220-018	234	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GIUSTI RICHARD/ SANDRA FAM TR	34-220-020	235	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-024	236	2	69.2	59.1	57.0	44.5	39.3	51.9	58.4	49.4	45.4	60.7	40.9	42.5	37.9	50.5	50.0	40.9	51.1	38.9	50.2	47.8	62.5	40.7
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-029	237	3	78.0	85.2	41.7	33.3	-	57.6	45.7	40.7	33.3	74.6	-	-	-	37.5	35.6	-	42.2	-	33.3	33.3	78.5	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-030	238	23	95.5	97.0	75.3	-	-	94.3	75.7	85.7	67.4	94.5	-	-	-	83.6	74.7	-	94.1	-	53.5	40.2	97.3	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-031	239	6	89.5	85.9	89.1	84.1	82.5	82.9	85.6	85.7	84.0	88.8	83.1	83.5	71.9	76.7	85.8	83.5	85.1	68.3	77.1	77.5	89.5	83.4
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-032	240	22	99.0	99.6	86.8	47.8	-	83.2	83.4	72.4	67.5	92.6	50.5	46.5	-	74.5	93.9	-	87.1	-	82.5	71.6	93.1	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-230-011	241	2	59.9	50.8	33.3	-	-	-	-	-	-	57.4	-	-	-	-	-	-	-	-	-	-	54.2	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-230-012	242	31	95.3	97.7	69.2	39.7	-	76.0	67.0	55.1	54.3	88.4	-	-	-	68.7	73.5	-	69.7	-	60.9	46.4	90.8	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-230-013	243	7	78.2	83.2	55.9	-	-	53.1	55.2	45.3	-	72.7	-	-	-	40.0	39.1	-	44.1	-	31.3	-	77.4	-
DEPT OF WATER RESOURCES	34-230-014	244	4	66.0	61.6	39.2	-	-	35.3	35.3	-	-	64.2	-	-	-	-	-	-	-	-	-	-	63.4	-
	34-240-013	245	1	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-	100.0	100.0	-	100.0	-	100.0	100.0	100.0	-
	34-240-014	246	33	66.0	65.6	52.6	46.9	-	47.8	54.7	46.7	46.2	61.8	48.6	43.3	-	52.7	53.0	-	52.1	-	52.0	48.0	58.9	-
SUTTER MUTUAL WATER CO	34-240-021	247	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUTTER BASIN CORP LTD	34-240-024	248	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Average Wet Day Depth (ft), Existing Conditions by WY

Parcel ID	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
124	5.2	6.4	2.0	1.3	-	3.3	2.6	1.8	2.1	4.6	1.2	1.4	-	1.9	1.4	-	1.8	-	1.9	1.6	4.0	-
125	7.7	9.9	3.4	2.1	-	3.6	4.6	3.2	2.6	6.6	2.6	2.4	-	3.5	2.8	-	3.4	-	3.5	3.2	6.2	-
126	8.0	6.7	2.8	2.2	-	2.7	4.6	2.5	2.3	6.7	2.7	1.6	-	3.7	2.1	-	2.1	0.4	3.0	2.9	5.5	0.5
127	9.1	6.3	3.3	2.9	1.2	3.2	5.5	3.0	2.6	7.7	1.7	2.7	-	4.3	2.6	1.3	2.9	1.2	2.6	3.1	6.6	1.3
128	8.4	10.6	3.9	2.5	-	4.1	5.1	3.6	3.0	7.0	2.9	2.8	-	3.9	3.3	-	3.8	-	4.1	3.5	6.6	-
129	7.6	9.8	3.3	2.0	-	3.5	4.4	2.9	2.4	6.3	2.4	2.2	-	3.3	2.6	-	3.1	-	3.4	2.9	5.8	-
130	6.8	8.3	2.3	0.7	-	3.2	3.4	2.0	1.6	5.7	1.3	0.9	-	2.3	1.4	-	2.5	-	2.5	2.0	5.4	-
131	7.6	10.0	2.6	1.7	-	2.7	4.3	2.2	1.9	6.5	3.0	1.6	-	3.2	2.2	-	2.5	-	2.8	2.4	5.3	-
132	9.5	9.8	4.4	4.2	-	4.6	6.4	4.2	4.2	8.4	4.4	3.3	-	5.5	3.7	1.1	4.2	-	5.2	4.6	7.3	-
133	7.7	9.9	3.2	1.6	-	3.3	4.5	2.8	2.4	6.3	2.8	1.9	-	3.2	2.5	-	3.2	-	3.4	2.8	5.9	-
134	6.7	8.1	2.6	0.9	-	4.2	3.5	2.1	2.0	5.8	1.1	0.9	-	2.8	1.3	-	2.5	-	2.5	1.9	5.5	-
135	7.1	5.8	2.2	1.6	-	2.3	3.9	2.0	1.9	6.0	1.5	1.5	-	3.0	1.6	0.9	1.8	-	1.7	2.1	4.9	0.8
136	8.3	10.7	2.3	2.2	-	2.3	4.6	2.1	1.8	7.2	3.6	2.0	-	3.9	2.0	-	2.1	-	2.2	2.6	5.8	0.3
137	8.3	10.7	2.3	2.3	-	2.4	4.6	2.1	1.9	7.2	3.6	1.7	-	3.9	2.0	-	2.2	-	2.3	2.6	5.7	0.3
138	8.1	10.1	2.2	2.1	-	2.3	4.4	2.2	2.0	6.7	3.4	1.9	0.2	3.6	1.8	0.2	2.0	0.2	2.0	2.6	5.8	0.2
139	8.1	10.4	2.7	2.3	-	3.1	4.8	2.5	2.3	6.9	3.4	1.7	-	3.8	2.6	-	2.8	-	3.3	2.7	5.8	-
140	6.7	8.2	2.4	1.0	-	3.7	3.4	2.2	2.0	5.8	1.3	1.1	-	2.7	1.5	-	2.5	-	2.5	2.2	5.6	-
141	7.3	8.8	2.9	1.7	-	3.7	4.0	2.6	2.3	6.2	1.9	1.6	-	3.0	2.0	-	3.0	-	3.2	2.6	6.0	-
142	6.6	8.5	2.5	1.2	-	3.4	3.6	2.3	1.9	5.9	1.7	1.3	-	2.6	1.8	-	2.7	-	2.7	2.1	5.5	-
143	7.6	9.8	3.3	1.9	-	3.5	4.7	3.0	2.6	6.4	3.0	2.2	-	3.3	2.8	-	3.3	-	3.7	3.0	6.1	-
144	7.3	9.5	1.9	1.4	-	1.9	3.8	1.9	1.6	6.3	2.8	1.5	-	3.1	1.8	-	1.7	0.1	2.0	1.9	5.1	0.2
145	8.0	10.1	3.6	2.0	-	3.7	5.0	3.4	2.8	6.9	3.4	2.4	-	3.6	3.0	-	3.5	-	4.1	3.3	6.4	-
146	6.9	6.3	2.7	2.1	-	2.8	4.0	2.4	2.3	5.9	2.1	1.8	-	3.1	2.1	1.3	2.2	-	3.0	2.5	4.9	-
147	7.7	9.7	3.3	2.4	-	3.5	4.7	3.0	2.8	6.5	3.0	2.4	-	3.6	2.8	-	3.5	-	3.7	3.0	5.9	-
148	8.5	10.5	2.5	2.3	-	2.5	4.8	2.3	2.1	7.2	4.0	1.9	0.1	4.0	2.3	0.1	2.2	0.2	2.2	2.9	6.1	0.2
149	7.9	10.2	2.3	2.1	-	2.2	4.4	2.0	1.6	6.8	3.3	2.0	-	3.6	2.1	-	2.2	-	2.6	2.3	5.5	-
150	8.5	10.7	3.9	2.8	-	4.1	5.5	3.7	3.3	7.3	3.9	2.7	-	4.3	3.4	-	4.0	-	4.4	3.7	6.6	-
151	7.7	5.3	2.4	2.0	0.9	2.5	4.3	2.2	2.0	6.2	1.3	1.9	-	3.3	1.9	1.1	2.2	0.9	2.1	2.2	5.4	1.0
152	7.9	10.2	2.2	2.1	-	2.2	4.4	2.2	2.0	6.9	3.3	1.5	-	3.7	1.8	-	2.0	-	2.1	2.6	5.6	0.2
153	8.0	10.3	2.2	2.1	-	2.2	4.4	2.1	1.9	6.9	3.4	1.6	-	3.7	1.8	-	2.0	-	2.1	2.6	5.6	0.2
154	9.4	11.6	4.9	3.3	-	5.0	6.5	4.4	4.1	8.1	4.9	3.7	-	5.0	4.2	-	4.9	-	5.5	4.6	7.7	-
155	9.5	11.5	4.6	3.2	-	4.6	6.4	4.1	3.7	8.2	3.1	3.0	-	5.0	4.3	-	4.7	-	5.1	4.3	7.4	-
156	8.8	9.7	3.9	2.9	-	4.3	5.8	3.5	3.4	7.7	3.0	2.6	-	4.6	3.4	-	3.9	-	4.7	4.0	6.7	-
157	7.2	9.2	2.0	1.6	-	2.0	3.8	1.7	1.4	6.1	2.6	1.7	-	3.0	1.9	-	1.9	-	2.4	1.9	5.2	-
158	7.8	9.6	2.1	1.6	-	2.1	4.1	1.9	1.6	6.3	3.2	1.6	0.1	3.3	1.9	0.2	1.9	0.2	1.8	2.4	5.6	0.3
159	7.0	5.0	2.2	2.0	0.7	2.4	3.8	2.2	1.8	5.8	1.1	1.8	-	3.1	1.8	1.0	2.0	0.8	1.8	2.1	4.9	0.9
160	8.9	10.8	4.1	3.4	-	4.4	5.8	3.8	3.6	7.7	2.8	2.7	-	4.7	3.8	-	4.2	-	4.8	4.0	7.0	-
161	7.9	9.9	3.5	2.3	-	3.6	4.9	3.1	2.9	6.7	3.2	2.4	-	3.7	3.0	-	3.6	-	3.9	3.3	6.2	-
162	7.5	6.4	2.7	2.2	-	2.9	4.5	2.6	2.5	6.4	2.1	1.8	-	3.6	2.1	1.1	2.3	-	3.3	2.8	5.4	-
163	8.2	10.2	2.4	2.2	-	2.3	4.7	2.5	1.9	7.2	3.7	2.2	-	4.0	2.1	-	2.2	0.1	2.2	2.8	6.0	0.3
164	7.5	9.4	2.2	1.5	-	2.1	4.1	2.2	1.8	6.5	3.1	1.8	-	3.3	2.1	-	2.1	-	2.4	2.2	5.4	0.3
165	6.3	7.8	2.4	1.2	-	3.8	3.5	2.4	2.2	5.7	1.5	1.1	-	2.7	1.7	-	2.6	-	2.7	2.1	5.6	-
166	5.8	6.9	2.3	1.5	-	2.9	3.1	2.2	2.0	4.9	1.9	1.6	-	2.3	1.9	-	2.3	-	2.3	2.1	4.7	-
167	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
168	6.0	5.3	-	-	-	-	-	-	-	5.0	-	-	-	-	-	-	-	-	-	-	4.7	-
169	4.1	3.1	2.0	-	-	1.8	1.7	1.3	1.3	3.4	-	-	-	1.3	-	-	1.3	-	1.2	-	3.4	-
170	4.1	3.1	2.0	-	-	2.3	2.3	-	-	3.9	-	-	-	-	-	-	-	-	-	-	3.7	-
171	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
172	4.8	3.4	-	-	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-	-	-	4.6	-
173	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
174	3.9	2.3	-	-	-	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-	-	3.1	-
175	4.1	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	2.3	-
176	8.9	10.6	4.2	2.1	-	4.1	5.7	3.6	3.1	7.6	4.0	2.8	-	4.3	3.7	-	4.2	-	4.7	3.8	6.9	-
177	8.1	9.5	4.2	2.2	-	4.7	5.1	4.0	3.2	7.5	3.6	3.0	-	4.3	3.7	-	4.4	-	4.2	3.9	7.2	-
178	8.2	9.8	3.9	2.2	-	3.9	5.2	3.7	3.2	7.1	3.5	2.7	-	4.1	3.4	-	3.9	-	4.3	3.6	6.9	-
179	6.8	8.2	3.7	3.0	-	3.9	4.3	3.4	3.3	5.9	3.4	3.1	-	3.6	3.2	-	3.6	-	3.7	3.4	5.5	-
180	4.7	5.2	2.5	-	-	3.1	2.8	2.5	2.4	4.3	-	1.9	-	2.5	2.1	-	2.4	-	2.4	2.2	3.9	-
181	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
182	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
183	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
184	10.5	9.3	7.7	8.2	-	7.8	8.1	7.5	7.7	9.8	7.9	7.8	-	8.1	6.9	6.1	7.0	-	7.4	7.8	9.1	5.3
185	6.4	6.1	5.4	-	-	5.5	5.6	5.6	5.5	6.2	-	-	-	5.5	-	-	5.6	-	5.7	5.9	5.8	-
186	5.5	6.4	2.5	1.3	-	3.6	3.1	2.4	2.2	4.8	0.9	1.4	-	2.6	1.7	-	2.4	-	2.7	2.1	4.8	-
187	6.9	8.6	2.9	1.5	-	4.3	4.3	2.9	2.6	6.5	2.0	1.4	-	3.3	2.5	-	3.2	-	3.2	2.5	6.2	0.1
188	6.7	8.3	2.0	1.2	-	2.6	3.4	2.3	1.7	5.7	2.2	1.4	-	2.7	1.9	-	1.9	-	2.3	1.8	5.1	0.2
189	6.8	7.6	3.7	3.2	-	4.5	4.2	3.6	3.4	6.3	3.2	3.2	-	3.8	3.5	-	3.7	-	3.6	3.4	6.2	-
190	7.9	8.5	4.7	4.4	-	4.8	4.9	4.5	4.4	7.0	4.6	4.5	-	4.6	4.5	-	4.7	-	4.3	4.4	6.7	-
191	9.6	10.2	3.9	3.1	-	3.5	5.0	3.2	2.8	8.2	3.5	2.5	-	4.6	4.1	-	3.7	-	3.8	3.3	7.2	-
192	5.8	5.5	5.0	-	-	5.0	4.9	4.9	4.6	5.5	-	-	-	4.8	4.8	-	4.9	-	4.9	-	5.3	-
193	5.4	6.3	2.1	0.6	-	3.4	2.9	2.0	1.9	4.9	0.4	0.7	-	2.2	1.6	-	2.4	-	2.5	1.8	4.7	-
194	4.0	2.9	-	-	-	-	-	-	-	3.7	-	-	-	-	-	-	-	-	-	-	3.2	-
195	5.3	5.3	3.6	-	-	4.1	3.7	3.5	3.4	4.9	-	-	-	3.5	3.4	-	3.6	-	3.2	3.0	4.8	-
196	12.7	11.3	-	-	-	-	-	-	-	11.5	-	-	-	-	-	-	-	-	-	-	13.1	-
197	10.2	11.0	7.1	6.2	-	7.3	7.7	6.9	6.7	9.4	5.9	6.2	-	7.1	6.8	-	7.1	-	7.2	6.7	9.2	-
198	6.0	6.9	3.1	2.1	-	4.3	3.7	3.0	3.0	5.5	2.3	2.2	-	3.1	2.5	-	3.2	-	3.2	2.7	5.5	-
199	12.7	7.7	6.6	5.2	1.9	5.2	8.2	5.0	4.5	10.9	2.5	4.9	1.8	6.8	5.5	2.3	5.2	2.0	4.3	4.8	9.9	2.2
200	7.8	8.1	4.3	2.9	-	3.7	4.7	3.5	3.2	6.7	3.1	3.1	-	4.1	4.4	-	4.1	-	4.1	3.5	6.3	-
201	2.1	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	-	-	-	-	-	1.1	-
202	3.2	2.5	-	-	-	1.8	-	-	-	2.9	-	-	-	-	-	-	-	-	-	-	2.5	-
203	6.7	-	-	-	-	-	-	-	-	7.4	-	-	-	-	-	-	-	-	-	-	8.0	-
204	11.2	8.7	5.6	4.7	-	5.1	6.8	4.7	4.5	9.7	3.6	3.9	-	6.0	5.4	2.6	5.1	-	5.3	5.0	8.7	-
205	11.0	7.4	5.1	4.0	-	4.1	6.4	4.1	3.8	9.6	3.0	3.3	-	5.7	4.3	1.6	3.9	-	3.2	4.4	8.5	1.4
206	10.8	6.8	4.8	3.5	-	3.7	6.1	3.6	3.4	9.4	2.0	2.9	-	5.5	3.8	1.0	3.3	-	2.5	3.8	8.2	0.7
207	6.4	6.5	3.6	1.3	-	2.7	3.5	2.7	2.1	5.4	1.2	1.7	-	2.9	3.5	-	3.1	-	2.9	2.3	5.3	-
208	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
209	6.7	-	-	-	-	-	-	-	-	7.6	-	-	-	-	-	-	-	-	-	-	8.9	-
210	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
211	8.6	9.0	4.3	3.1	-	3.6	4.9	3.4	3.1	7.4	3.0	2.7	-	4.3	4.1	-	3.9	-	4.0	3.6	6.7	-
212	12.5	6.6	5.8	5.2	1.2	4.5	7.9	4.7	3.7	10.3	1.3	3.8	-	7.5	4.7	1.4	4.4	-	3.4	4.5	10.2	1.2
213	12.9	7.6	5.9	4.4	1.1	4.9	8.7	5.3	4.2	10.3	1.3	4.1	1.0	6.7	5.3	1.7	5.5	1.2	4.5	4.7	9.4	1.1
214	8.6	5.0	3.9	2.1	1.0	3.9	7.5	4.0	2.7	6.3	1.3	2.2	0.8	2.7	3.3	1.0	3.7	0.7	3.9	3.8	7.8	1.1
215	9.4	6.0	4.5	3.1	-	3.5	5.3	3.5	3.2	8.2	1.5	3.1	-	4.8	3.7	1.4	3.3	-	2.5	3.3	7.3	1.0
216	9.1	6.6	4.4	3.6	-	3.8	5.3	3.6	3.4	8.0	2.7	2.9	-	4.8	4.2	1.4	3.7	-	4.0	3.9	7.1	-
217	9.6	6.9	4.7	3.8	-	4.0	5.6	3.8	3.7	8.4	3.0	3.1	-	5.0	4.4	1.9	3.9	-	4.1	4.1	7.5	-
218	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
219	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
221	9.6	9.0	4.5	3.1	-	3.9	5.3	3.4	3.2	8.3	3.0	2.6	-	4.5	4.5	-	4.3	-	4.2	3.8	7.5	0.6
222	6.6	6.8	3.3	1.1	-	2.5	3.1	2.3	1.7	5.5	1.0	1.4	-	2.5	3.2	-	2.8	-	2.5	1.9	5.5	-
223	8.1	8.3	4.4	2.2	-	3.6	4.1	3.5	2.7	6.9	2.1	2.5	-	3.5	4.3	-	3.9	-	3.4	2.9	6.8	-
224	4.7	4.9	2.1	-	-	2.8	1.9	1.9	1.1	4.3	-	-	-	1.9	1.7	-	2.3	-	1.0	0.7	4.5	-
225	5.6	5.9	2.7	0.9	-	3.5	2.6	1.9	1.8	5.0	-	0.8	-	2.3	2.6	-	2.7	-	2.0	1.5	5.2	-
226	19.0	19.1	22.8	20.1	18.1	20.4	21.0	21.4	20.1	19.5	18.7	19.4	16.2	18.4	20.9	18.7	20.3	15.8	18.7	18.9	20.0	18.5
227	2.7	2.6	1.1	-	-	1.1	1.2	0.6	-	2.2	-	-	-	0.6	0.5	-	0.8	-	-	-	2.3	-
228	20.4	19.4	20.9	18.8	17.4	19.4	20.6	19.8	18.8	20.1	17.9	18.3	17.3	18.6	19.7	17.6	19.3	17.0	18.8	18.8	20.3	17.5
229	5.3	5.6	2.6	1.1	-	3.3	2.5	2.0	1.9	4.9	-	0.8	-	2.4	2.5	-	2.7	-	2.0	1.6	5.0	-
230	6.4	6.7	3.5	-	-	4.1	3.4	2.9	2.8	5.9	-	1.9	-	3.2	3.3	-	3.7	-	2.9	2.6	6.1	-
231	7.4	7.7	3.9	1.9	-	3.3	3.8	3.1	2.5	6.4	2.0	2.2	-	3.2	3.9	-	3.7	-	3.2	2.7	6.2	-
232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
234	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
236	9.9	8.6	8.5	6.6	5.0	8.2	8.3	7.8	6.7	8.5	5.4	6.0	4.1	7.1	7.1	5.4	6.9	4.4	7.0	6.9	9.0	5.2
237	3.8	3.7	2.5	0.9	-	2.7	2.2	2.3	2.2	3.4	-	-	-	2.7	2.9	-	2.7	-	2.3	1.7	3.4	-
238	4.6	4.7	2.5	-	-	3.1	2.8	2.6	2.0	4.2	-	-	-	2.4	2.2	-	2.6	-	2.1	2.0	4.4	-
239	19.8	16.7	17.5	13.7	11.8	15.3	16.6	15.4	13.9	18.1	12.4	13.0	11.1	13.3	15.3	12.3	14.9	11.1	13.5	13.5	18.5	12.0
240	11.4	11.6	9.2	11.3	-	10.0	9.2	9.2	9.9	11.0	10.3	11.0	-	9.6	8.7	-	9.2	-	8.9	9.2	11.1	-
241	2.7	2.4	2.2	-	-	-	-	-	-	2.6	-	-	-	-	-	-	-	-	-	-	2.3	-
242	6.3	6.4	3.7	2.1	-	4.1	3.7	3.0	3.0	5.5	-	-	-	3.4	3.6	-	3.5	-	3.4	2.7	5.7	-
243	3.8	3.6	2.5	-	-	2.6	2.6	2.2	-	3.4	-	-	-	2.1	2.1	-	2.2	-	2.0	-	3.5	-
244	2.0	1.6	1.0	-	-	0.9	0.9	-	-	1.9	-	-	-	-	-	-	-	-	-	-	1.6	-
245	9.8	10.2	4.4	2.8	-	3.8	5.3	3.4	3.0	8.4	2.8	2.1	-	4.6	4.7	-	4.4	-	4.3	3.7	7.6	-
246	8.5	9.0	4.9	3.3	-	4.1	5.2	3.8	3.5	7.5	3.2	3.1	-	4.6	4.7	-	4.5	-	4.5	4.0	7.1	-
247	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
248	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Change in Depth (Project - Existing) During Wet Days (ft), by WY

Parcel ID	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg. Wet Day Inundated Area (%)	Avg. Wet Day Depth (ft)	Avg. Change in Depth During Wet
124	0.0	0.0	0.0	0.1	-	0.0	0.0	0.0	-0.2	0.0	0.1	0.0	-	0.0	0.0	-	0.0	-	-0.1	0.0	0.0	-	81.4	3.7	0.0
125	-0.1	0.0	-0.3	0.4	-	0.0	0.0	-0.1	0.2	0.0	0.2	0.1	-	0.2	0.1	-	0.1	-	0.2	-0.1	-0.5	-	90.5	5.0	0.0
126	0.1	-0.1	0.1	0.4	-	0.2	0.0	0.3	0.1	0.2	-0.1	0.2	-	0.2	0.2	-	0.1	0.0	-0.2	0.0	0.2	0.0	85.3	4.1	0.1
127	0.0	0.0	0.3	0.3	0.0	0.1	0.2	0.1	0.2	0.1	0.0	0.2	-	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	78.4	4.4	0.1
128	-0.1	-0.5	-0.4	0.3	-	-0.1	0.0	-0.1	0.2	0.1	0.1	0.0	-	0.2	0.1	-	0.1	-	0.1	0.0	-0.2	-	92.4	5.4	-0.1
129	-0.1	-0.3	-0.4	0.3	-	-0.1	0.0	-0.1	0.2	0.2	0.1	-0.1	-	0.2	0.1	-	0.1	-	0.2	0.0	-0.2	-	88.9	4.7	0.0
130	-0.4	0.0	-0.1	0.0	-	-0.7	-0.1	-0.1	0.0	-0.5	0.1	0.1	-	-0.1	0.0	-	-0.1	-	-0.1	-0.1	-0.3	-	91.5	4.1	-0.2
131	0.1	-0.3	-0.2	0.4	-	0.0	0.0	0.1	0.0	0.0	0.1	-0.1	-	0.2	0.1	-	0.1	-	0.1	0.0	0.0	-	86.5	4.2	0.0
132	0.0	-0.3	0.3	0.4	-	0.2	0.1	0.4	0.2	0.2	0.2	0.3	-	0.2	0.3	0.9	0.0	-	-0.3	-0.1	0.1	-	86.2	6.1	0.1
133	-0.1	-0.3	-0.5	0.3	-	0.0	0.0	-0.2	0.0	0.1	0.1	0.0	-	0.1	0.1	-	0.0	-	0.1	0.0	-0.1	-	93.4	4.8	-0.1
134	-0.1	0.0	-0.2	-0.1	-	-1.0	-0.1	0.0	-0.3	-0.2	0.1	0.0	-	-0.4	0.0	-	0.0	-	0.0	0.0	-0.1	-	97.2	4.4	-0.1
135	0.1	-0.2	0.1	0.1	-	0.1	0.0	0.0	0.0	0.1	-0.3	0.1	-	0.1	0.1	0.0	0.0	-	0.0	0.0	0.1	0.1	68.4	3.3	0.0
136	0.1	0.0	0.0	0.5	-	0.1	0.2	0.2	0.2	0.2	0.2	-0.5	-	0.2	0.1	-	0.1	-	0.1	0.2	0.1	0.0	88.9	4.0	0.1
137	0.1	0.0	0.0	0.4	-	0.1	0.2	0.2	0.2	0.0	0.2	-0.1	-	0.2	0.1	-	0.1	-	0.0	0.1	0.2	0.0	87.9	4.0	0.1
138	0.1	0.0	0.0	0.3	-	0.1	0.1	0.2	0.1	0.2	0.1	-0.6	0.0	0.2	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.0	92.1	3.8	0.1
139	0.1	-1.7	0.1	0.2	-	-0.1	0.0	0.2	0.1	0.1	0.2	0.2	-	0.2	0.0	-	0.1	-	-0.3	-0.2	0.0	-	82.3	4.5	-0.1
140	-0.1	0.0	0.0	-0.1	-	-0.6	0.0	0.0	-0.1	-0.2	0.1	0.1	-	-0.2	0.0	-	0.1	-	0.1	-0.2	-0.3	-	93.4	4.4	-0.1
141	-0.3	0.0	-0.1	-0.2	-	-0.4	-0.1	-0.1	0.0	-0.5	0.1	0.0	-	0.0	0.0	-	0.1	-	-0.1	-0.1	-0.1	-	91.1	4.6	-0.2
142	-0.1	0.0	0.0	0.1	-	-0.6	-0.1	-0.1	-0.1	-0.4	0.1	0.1	-	0.0	0.0	-	-0.1	-	0.0	0.1	-0.1	-	88.1	4.2	-0.1
143	0.1	-0.2	-0.4	0.3	-	-0.2	0.0	-0.2	0.1	0.1	0.1	-0.1	-	0.2	0.0	-	0.1	-	0.0	0.1	-0.1	-	90.5	4.9	0.0
144	0.1	0.0	0.1	0.5	-	0.1	0.2	-0.1	-0.1	0.1	0.1	0.2	-	0.2	0.1	-	0.1	0.0	0.0	0.2	0.1	0.0	89.4	3.6	0.1
145	0.1	-0.3	-0.4	0.4	-	-0.2	0.0	-0.3	0.1	0.0	0.2	0.0	-	0.2	0.1	-	0.2	-	0.0	0.1	-0.2	-	94.2	5.2	0.0
146	0.1	0.0	0.0	0.2	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	0.1	0.1	0.1	0.1	-	-0.1	0.0	0.1	-	73.5	3.9	0.1
147	0.0	-0.2	-0.3	-0.1	-	0.0	0.1	-0.1	0.1	0.1	-1.2	-0.3	-	0.1	0.1	-	-0.1	-	-0.1	0.0	-0.1	-	85.6	4.9	0.0
148	0.1	0.0	0.0	0.5	-	0.1	0.2	0.3	0.2	0.2	0.2	-0.3	0.0	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	91.1	4.1	0.1
149	0.1	0.0	-0.1	0.4	-	0.1	0.2	0.2	0.1	0.1	0.1	-0.5	-	0.2	0.1	-	0.0	-	0.1	0.1	0.0	-	89.4	4.0	0.1
150	0.1	-0.3	-0.3	0.3	-	0.0	0.0	-0.2	0.1	0.1	0.1	0.0	-	0.2	0.2	-	0.0	-	-0.1	0.0	0.0	-	89.8	5.5	0.0
151	0.1	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.2	0.0	0.1	-	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	72.6	3.5	0.1
152	0.1	0.0	0.0	0.3	-	0.1	0.1	0.1	0.1	0.0	0.1	0.2	-	0.2	0.0	-	0.1	-	0.1	0.1	0.1	0.0	88.0	3.8	0.1
153	0.1	0.0	0.0	0.3	-	0.1	0.1	0.2	0.1	0.0	0.1	0.0	-	0.2	0.1	-	0.1	-	0.1	0.1	0.1	0.0	91.8	3.8	0.1
154	0.1	-0.3	-0.7	0.6	-	-0.2	0.0	-0.1	0.1	0.2	0.2	-0.3	-	0.3	0.3	-	0.2	-	-0.2	-0.1	-0.1	-	99.6	6.5	0.0
155	0.1	-0.3	-0.4	0.5	-	0.1	0.0	-0.1	0.3	0.2	0.1	0.2	-	0.3	0.2	-	-0.1	-	0.0	0.2	0.1	-	95.1	6.2	0.1
156	0.1	-0.6	0.1	0.3	-	-0.1	0.0	0.4	0.2	0.0	0.1	0.4	-	0.3	-0.1	-	0.2	-	-0.6	-0.3	0.2	-	86.9	5.5	0.0
157	0.1	0.0	0.1	0.4	-	0.1	0.2	0.2	0.1	0.2	0.2	0.1	-	0.2	0.1	-	0.1	-	0.1	0.2	-0.1	-	85.4	3.6	0.1
158	0.1	0.0	0.1	0.3	-	0.1	0.2	0.2	0.2	0.1	0.2	-0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	89.4	3.6	0.1
159	0.1	-0.2	0.2	0.1	0.0	0.1	0.1	-0.1	0.2	0.1	0.0	0.1	-	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	68.6	3.2	0.1
160	0.1	-0.5	-0.2	0.1	-	0.0	0.1	0.0	0.1	0.1	0.1	0.2	-	0.2	0.0	-	0.1	-	-0.3	0.0	-0.1	-	86.5	5.8	0.0
161	0.1	-0.2	-0.3	0.1	-	0.0	0.0	-0.1	0.1	0.1	0.2	-0.2	-	0.1	0.1	-	0.1	-	0.0	-0.1	-0.1	-	87.1	5.0	0.0
162	0.1	0.0	0.1	0.0	-	0.0	0.1	0.2	0.1	0.1	0.2	0.2	-	0.1	0.1	0.0	0.0	-	-0.3	-0.1	0.1	-	80.3	4.1	0.1
163	0.1	0.1	0.1	0.4	-	0.1	0.2	-0.1	0.2	0.2	0.2	0.3	-	0.2	0.1	-	0.1	0.0	0.1	0.2	0.1	0.0	91.4	4.1	0.1
164	0.1	0.0	0.1	0.6	-	0.1	0.1	0.1	0.2	0.1	0.1	0.2	-	0.2	0.0	-	0.1	-	0.0	0.2	0.1	0.0	84.8	3.9	0.1
165	-0.1	0.0	-0.1	-0.4	-	-0.7	0.0	-0.1	-0.3	-0.2	0.2	0.2	-	-0.1	0.1	-	-0.1	-	0.1	0.0	-0.4	-	94.5	4.3	-0.1
166	-0.2	0.0	-0.1	0.1	-	-0.2	-0.1	0.0	0.0	-0.3	0.1	0.1	-	0.0	0.0	-	0.1	-	0.0	0.0	-0.2	-	78.5	3.7	-0.1
167	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
168	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	69.0	5.3	0.0
169	-0.1	0.0	0.0	-	-	0.0	0.0	0.0	0.1	0.0	-	-	-	0.1	-	-	0.0	-	0.0	-	0.0	-	72.7	3.2	0.0
170	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-0.1	-	-	-	-	-	-	-	-	-	-	0.0	-	66.3	3.6	0.0
171	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
172	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	74.3	4.5	0.0
173	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
174	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	76.1	3.3	0.0
175	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	79.3	3.1	0.0
176	0.1	0.0	-0.5	0.7	-	0.0	0.0	-0.1	0.3	0.1	0.2	0.1	-	0.3	0.0	-	0.2	-	0.0	0.2	0.0	-	92.1	5.8	0.0
177	0.0	0.0	-0.1	0.4	-	-0.2	-0.1	-0.1	0.3	-0.5	0.1	0.1	-	-0.1	-0.1	-	0.0	-	0.2	-0.1	-0.2	-	84.4	5.8	-0.1
178	0.0	0.0	-0.2	0.5	-	0.2	0.0	-0.2	0.0	0.0	0.2	0.2	-	0.1	0.1	-	0.2	-	0.2	0.1	-0.3	-	88.8	5.5	0.0
179	0.0	0.0	-0.2	0.1	-	-0.1	0.0	-0.1	0.1	0.1	-0.4	0.1	-	0.1	0.1	-	0.1	-	0.1	0.0	0.1	-	74.9	4.7	0.0
180	0.0	0.0	0.0	-	-	0.0	0.0	-0.1	0.1	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	74.7	3.7	0.0
181	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.7	0.2	0.0
182	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
183	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
184	0.1	-0.1	0.4	0.3	-	0.2	0.1	0.3	0.1	-0.1	-0.5	0.2	-	0.1	0.1	0.4	0.0	-	0.0	-0.2	0.1	0.0	65.5	8.3	0.1
185	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	-0.1	-0.1	0.0	-	63.2	6.0	0.0
186	-0.2	0.0	0.1	0.1	-	0.1	0.0	-0.2	0.2	0.0	0.2	0.0	-	-0.1	0.1	-	0.0	-	0.1	0.0	0.0	-	79.7	4.0	0.0
187	0.0	-0.2	0.0	-0.3	-	-0.7	-0.2	0.0	-0.4	-0.3	0.3	0.3	-	-0.1	0.0	-	0.0	-	-0.2	0.1	-0.3	0.0	92.5	4.9	-0.2
188	0.1	0.0	0.0	0.1	-	0.0	0.1	0.0	0.1	0.1	0.2	0.2	-	0.1	0.1	-	0.1	-	0.0	0.1	-0.1	0.0	81.3	3.7	0.0
189	0.0	0.0	0.0	-0.1	-	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-	-0.1	0.0	-	0.1	-	0.1	0.0	0.0	-	78.9	5.2	0.0
190	0.0	0.0	0.0	0.2	-	0.1	0.0	-0.1	0.0	0.0	0.2	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	72.9	5.7	0.0
191	0.0	-2.0	0.0	0.3	-	0.0	0.0	0.2	0.1	0.1	0.1	0.2	-	0.1	-0.1	-	0.0	-	-0.3	0.1	0.1	-	83.4	5.3	-0.1
192	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	-	0.0	-	56.2	5.4	0.0
193	0.0	0.0	0.1	0.2	-	-0.1	0.1	-0.1	-0.3	0.0	0.2	-0.1	-	-0.1	0.0	-	0.0	-	-0.1	0.0	0.0	-	77.7	3.8	0.0
194	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	69.9	3.6	0.0
195	0.0	0.0	0.0	-	-	-0.2	0.0	0.0	0.0	0.0	-	-	-	-0.1	0.0	-	0.0	-	0.0	0.0	0.0	-	61.3	4.5	0.0
196	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	57.7	12.2	0.0
197	0.0	0.0	-0.1	-0.2	-	-0.2	0.0	-0.1	-0.1	0.0	0.4	0.0	-	0.0	0.0	-	0.0	-	-0.1	0.0	-0.1	-	73.7	8.2	0.0
198	0.0	0.0	-0.1	0.1	-	0.1	0.0	-0.1	0.0	0.1	-0.5	-0.1	-	0.1	0.1	-	0.0	-	0.1	0.0	0.0	-	77.5	4.6	0.0
199	0.0	0.0	0.3	0.3	0.0	0.2	0.2	0.3	0.1	0.1	0.0	0.3	0.0	0.1	0.1	0.2	0.0	0.0	0.1	0.3	0.1	0.0	81.9	6.7	0.1
200	0.0	0.0	-0.2	0.3	-	0.0	0.0	-0.2	0.0	0.0	0.0	-0.3	-	0.1	0.0	-	0.0	-	0.1	0.1	0.0	-	72.6	5.2	0.0
201	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	64.3	1.7	0.0
202	0.0	0.0	-	-	-	0.0	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	60.9	2.8	0.0
203	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	54.4	7.2	0.0
204	0.0	0.0	0.2	0.3	-	0.0	0.0	0.2	0.2	0.1	0.0	0.1	-	0.1	0.2	0.1	0.0	-	-0.3	-0.1	0.1	-	86.4	6.8	0.1
205	0.0	0.0	0.1	0.3	-	0.2	0.0	0.3	0.1	0.1	0.0	0.2	-	0.1	0.1	0.2	0.0	-	0.0	-0.2	0.1	-	85.8	5.9	0.1
206	0.0	0.1	0.2	0.3	-	0.2	0.1	0.3	0.1	0.0	0.1	0.2	-	0.1	0.1	0.1	0.0	-	0.1	-0.1	0.1	0.0	85.6	5.4	0.1
207	0.0	0.0	-0.3	0.3	-	-0.1	0.0	-0.2	0.0	0.0	0.1	0.1	-	-0.1	-0.1	-	0.1	-	0.0	0.0	-0.1	-	62.6	4.1	-0.1
208	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.1	1.8	0.0
209	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	62.3	7.2	0.0
210	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89.3	1.8	0.0
211	0.0	-0.8	0.0	0.3	-	0.1	0.0	0.1	0.1	0.0	0.1	0.2	-	0.1	0.0	-	0.0	-	-0.1	0.0	0.0	-	75.1	5.2	0.0
212	0.0	0.0	0.2	0.3	0.0	0.2	0.2	0.3	0.2	-0.3	0.0	0.2	-	0.2	0.1	0.1	0.0	-	0.1	0.2	0.1	0.0	89.5	5.9	0.1
213	0.0	0.0	0.2	0.2	0.0	0.2	0.2	0.3	0.2	0.0	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.2	0.3	0.1	0.0	92.6	6.0	0.1
214	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.0	67.6	3.5	0.1
215	0.0	0.1	0.1	0.2	-	0.2	0.0	0.1	0.1	0.0	0.4	0.2	-	0.1	0.1	0.3	0.0	-	0.1	0.1	0.0	0.0	69.8	4.9	0.1
216	0.0	-0.1	0.1	0.2	-	0.0	0.0	0.2	0.1	0.0	0.0	0.2	-	0.1	0.1	0.4	0.0	-	-0.3	-0.1	0.0	-	72.9	5.3	0.0
217	0.0	0.0	0.1	0.2	-	0.1	0.0	0.2	0.0	0.0	0.0	0.1	-	0.1	0.1	0.2	0.0	-	-0.2	-0.3	0.0	-	78.1	5.6	0.0
218	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
219	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
221	0.0	-0.6	0.1	0.3	-	0.0	0.0	0.2	0.1	-0.1	0.1	0.1	-	0.1	0.0	-	0.0	-	-0.4	0.0	0.0	0.0	89.5	5.6	0.0
222	0.0	0.0	-0.2	0.2	-	-0.1	0.0	-0.2	0.0	0.0	0.1	0.1	-	-0.1	-0.2	-	0.0	-	0.0	-0.1	-0.2	-	78.9	4.0	-0.1
223	0.0	0.0	-0.3	0.2	-	-0.2	0.0	-0.2	0.0	0.0	0.1	0.1	-	0.0	-0.2	-	0.0	-	0.0	-0.1	-0.2	-	86.8	5.2	-0.1
224	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-0.1	-	0.0	-	0.0	0.0	0.0	-	95.1	3.5	0.0
225	0.1	0.0	-0.1	0.0	-	-0.2	-0.1	-0.1	-0.2	-0.1	-	0.0	-	-0.1	-0.1	-	0.0	-	0.0	0.0	0.0	-	87.7	3.9	0.0
226	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.0	19.4	0.0
227	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	0.0	-	-	-	0.0	0.0	-	0.0	-	-	-	0.0	-	86.2	2.1	0.0
228	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.3	18.9	0.0
229	0.0	0.0	0.0	-0.1	-	0.0	-0.1	-0.1	-0.1	0.0	-	0.0	-	-0.1	0.0	-	0.0	-	0.0	0.0	0.0	-	88.1	3.9	0.0
230	0.0	0.0	0.0	-	-	0.0	-0.1	-0.1	-0.1	-0.1	-	0.0	-	-0.1	0.0	-	-0.2	-	0.0	0.0	0.0	-	88.3	4.9	0.0
231	0.0	0.0	-0.2	0.2	-	-0.2	0.0	-0.2	0.1	0.0	0.0	0.1	-	0.0	-0.1	-	0.0	-	0.1	0.0	-0.2	-	81.0	4.8	0.0
232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
234	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
236	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.1	7.1	0.0
237	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-0.1	0.0	-	-	-	0.0	0.0	-	-0.1	-	0.0	0.0	0.0	-	61.9	3.1	0.0
238	0.0	0.1	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	88.2	3.7	0.0
239	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	82.9	14.5	0.0
240	0.0	0.0	0.0	0.4	-	0.3	-0.1	0.1	-0.1	0.0	0.4	-0.8	-	-0.1	0.2	-	0.1	-	0.5	-0.2	0.0	-	86.7	10.3	0.0
241	0.0	0.0	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	55.7	2.5	0.0
242	0.0	0.0	0.0	-0.3	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.2	0.0	-	78.5	4.7	0.0
243	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	-	0.0	-	70.2	3.3	0.0
244	0.0	0.0	0.0	-	-	0.0	0.0	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	62.8	1.7	0.0
245	0.0	-0.3	0.0	0.4	-	0.1	0.0	-0.2	0.2	0.0	0.1	0.2	-	0.1	-0.4	-	0.1	-	-0.2	-0.1	0.1	-	100.0	5.8	0.0
246	0.0	0.0	-0.3	0.3	-	0.1	0.0	0.0	0.2	0.1	0.0	0.1	-	0.1	-0.1	-	0.0	-	0.1	0.0	0.0	-	54.9	5.6	0.0
247	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
248	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Waterfowl Season Summary WYs 1997-2018

Owner	APN	Parcel ID	Parcel Area	Average Wet Day Inundated Area (%), Existing Conditions by WY 1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	56 DEEDS71	249	70	68.4	61.5	58.9	50.4	44.0	60.4	63.2	58.8	55.8	64.5	45.7	50.9	42.7	52.3	56.9	45.1	58.4	42.6	56.9	51.1	65.9	45.3
	56 DEEDS71	250	113	86.1	89.1	63.6	53.9	-	60.3	76.3	58.7	57.0	81.1	71.1	47.5	-	67.3	59.4	-	59.1	-	70.1	60.9	77.1	-
	56 DEEDS71	251	26	97.6	100.0	83.1	55.6	-	74.7	91.2	80.7	67.3	94.3	94.4	72.2	-	80.7	83.0	-	86.3	-	89.5	85.5	94.0	-
	56 DEEDS79	252	30	96.8	100.0	75.7	90.1	-	79.1	94.5	78.7	78.9	95.0	73.3	69.1	-	93.8	84.2	-	79.5	-	81.7	81.4	88.2	-
	56 DEEDS79	253	35	94.2	76.5	66.9	63.3	-	63.4	85.9	66.4	59.0	91.2	48.9	61.1	-	82.5	62.0	42.5	62.9	-	60.0	66.7	83.8	40.7
	61 DEEDS128	254	57	92.4	98.7	66.1	39.1	-	63.2	76.5	61.2	54.0	85.5	40.3	44.3	-	65.2	49.2	-	69.6	-	74.4	60.8	87.9	-
	61 DEEDS133	255	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	61 DEEDS135	256	39	86.1	97.5	59.3	31.2	-	69.8	71.2	56.5	54.9	81.3	-	43.3	-	64.7	48.0	-	55.9	-	56.4	52.6	78.3	-
	61 DEEDS199	257	75	95.7	99.4	86.5	61.5	-	88.5	88.8	78.7	71.5	93.2	75.6	62.0	-	80.2	68.5	-	85.2	-	80.8	79.6	94.8	-
	61 DEEDS200	258	27	93.3	98.8	79.5	62.0	-	74.0	82.7	73.8	63.6	88.8	79.6	61.4	-	75.9	73.6	-	75.7	-	80.0	72.8	89.1	-
	61 DEEDS461	259	17	95.5	100.0	72.7	-	-	92.7	85.4	84.1	70.9	91.9	-	-	-	83.8	36.4	-	74.5	-	70.2	59.1	91.2	-
	61 DEEDS466	260	29	92.6	99.9	69.5	-	-	85.3	79.0	68.1	62.5	89.3	-	31.0	-	80.3	37.1	-	72.4	-	78.4	60.3	86.6	-
	61 DEEDS95	261	28	83.0	95.1	69.2	-	-	77.8	69.6	58.5	51.3	80.6	-	-	-	56.9	-	-	36.3	-	41.5	34.6	80.6	-
	63 DEEDS266	262	27	82.3	92.9	58.0	-	-	67.9	64.4	55.2	53.0	76.9	-	39.7	-	59.4	40.7	-	54.1	-	57.1	51.1	73.0	-
	63 DEEDS268	263	27	93.7	99.2	77.6	-	-	85.6	86.9	74.4	70.3	91.3	-	-	-	84.0	39.4	-	80.3	-	82.6	66.3	91.3	-
	65 DEEDS221	264	42	85.0	77.2	60.6	56.5	37.7	74.5	91.1	75.1	62.4	80.1	39.5	62.9	34.3	60.5	61.9	44.4	77.9	36.9	79.1	69.0	79.5	38.2
	65 DEEDS319	265	145	93.3	99.5	74.5	54.5	-	66.9	85.6	69.9	61.4	86.9	58.9	59.1	-	74.2	69.5	-	70.4	-	79.3	69.8	84.1	-
	71 DEEDS387	266	36	84.7	93.0	52.0	-	-	78.2	69.5	61.6	55.7	79.7	-	-	-	59.9	-	-	52.5	-	55.6	52.4	77.3	-
	71 DEEDS413	267	36	94.5	97.9	82.6	52.2	-	72.4	81.7	79.2	74.9	90.2	56.1	61.9	-	75.8	64.3	-	81.2	-	92.5	72.7	88.8	-
	71 DEEDS492	268	19	93.6	99.5	82.5	44.0	-	69.7	81.5	74.6	68.2	91.9	44.7	54.1	-	75.0	57.2	-	79.1	-	88.5	73.8	86.2	-
	79 DEEDS141	269	31	91.4	74.1	65.7	68.7	30.8	66.3	89.9	68.1	70.4	88.7	49.5	64.9	-	84.3	59.2	32.7	73.8	30.8	76.5	69.9	84.2	30.8
	79 DEEDS151	270	29	83.1	90.3	65.2	-	-	78.0	73.0	47.1	50.0	84.4	-	-	-	48.9	-	-	52.2	-	58.7	-	77.4	-
	79 DEEDS164	271	1	87.9	97.6	72.8	61.1	-	80.6	77.3	70.2	64.6	86.1	75.0	67.9	-	70.3	70.3	-	70.3	-	72.1	75.0	85.5	-
	79 DEEDS26	272	140	58.1	66.4	40.0	35.4	-	45.6	42.9	36.6	40.8	56.2	36.4	35.8	-	39.2	34.0	-	39.5	-	39.0	37.3	54.5	-
	85 DEEDS430	273	51	99.7	83.2	95.6	93.3	31.1	87.4	97.3	89.1	87.0	97.4	49.7	94.2	-	99.8	86.5	56.5	85.8	-	73.0	84.7	99.3	42.6
	85 DEEDS430	274	175	71.1	53.9	57.8	53.8	31.8	51.4	63.6	51.9	49.3	68.4	36.3	50.1	-	61.6	52.3	36.6	52.2	31.1	47.1	50.0	67.5	34.8
	97 DEEDS170	275	42	93.7	99.8	80.0	65.5	-	70.3	85.3	70.1	68.6	88.4	92.5	63.2	-	79.3	69.0	-	78.6	-	82.7	75.1	84.3	-
	057 030 01	276	112	95.7	96.9	74.4	31.7	-	82.6	69.5	58.8	61.3	92.7	-	32.4	-	72.5	79.4	-	80.9	-	69.0	51.3	92.5	-

Parcel ID	Average Wet Day Depth (ft), Existing Conditions by WY 1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
249	5.2	4.1	2.6	1.7	1.4	2.8	3.4	2.6	2.2	4.2	1.5	1.9	1.3	2.1	2.3	1.4	2.6	1.2	2.5	2.0	4.2	1.4
250	6.6	7.5	3.2	2.5	-	3.3	4.2	2.9	2.8	5.7	2.9	2.3	-	3.4	2.8	-	3.0	-	3.5	3.0	5.1	-
251	7.3	9.0	2.8	1.5	-	3.4	3.9	2.5	2.1	6.1	2.0	1.7	-	2.8	2.0	-	2.9	-	3.0	2.6	5.8	-
252	8.2	10.6	2.7	2.3	-	3.2	4.9	2.7	2.4	7.0	2.5	1.7	-	3.8	2.7	-	3.0	-	3.2	2.9	5.9	-
253	7.3	5.7	2.3	2.0	-	2.4	4.1	2.2	1.8	6.3	1.3	1.7	-	3.4	1.7	0.8	1.9	-	1.8	2.2	5.0	0.8
254	6.3	7.9	2.7	2.0	-	3.1	3.4	2.6	2.4	5.2	2.1	2.2	-	2.6	2.3	-	2.6	-	2.6	2.4	4.8	-
255	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256	4.9	7.1	1.7	1.2	-	2.5	2.4	1.5	1.3	4.1	-	1.0	-	1.7	1.2	-	1.3	-	1.5	1.3	3.4	-
257	6.6	8.1	2.8	1.4	-	4.3	3.6	2.4	2.4	5.7	1.6	1.5	-	2.7	1.6	-	2.7	-	2.7	2.2	5.3	-
258	6.4	7.9	2.8	1.5	-	2.9	3.5	2.4	1.9	5.4	2.8	1.6	-	2.7	2.2	-	2.7	-	2.9	2.5	4.9	-
259	5.1	6.3	1.9	-	-	3.3	2.6	2.0	1.8	4.5	-	-	-	1.8	1.4	-	1.6	-	1.7	1.7	3.4	-
260	5.5	6.9	2.1	-	-	3.6	2.9	2.2	1.9	4.9	-	1.3	-	2.3	1.4	-	2.0	-	2.1	1.8	3.8	-
261	3.9	4.8	1.4	-	-	2.3	1.9	1.3	1.0	3.7	-	-	-	1.1	-	-	0.8	-	0.9	0.9	2.5	-
262	6.0	7.0	3.3	-	-	4.0	3.8	3.2	3.0	5.3	-	2.0	-	3.5	2.0	-	3.3	-	3.4	2.8	4.3	-
263	5.5	6.9	2.2	-	-	3.5	3.1	2.2	2.0	4.8	-	-	-	2.3	1.4	-	2.0	-	2.1	1.7	3.9	-
264	7.7	5.7	2.6	2.1	1.2	3.4	5.7	3.3	2.5	6.2	1.3	2.4	1.1	2.8	2.5	1.4	3.4	1.1	3.4	3.0	5.5	1.2
265	7.3	9.2	3.3	2.5	-	3.7	4.3	3.1	2.9	6.1	2.4	2.5	-	3.4	2.8	-	3.1	-	3.5	3.0	5.6	-
266	4.9	5.9	2.1	-	-	3.3	2.8	2.3	2.0	4.2	-	-	-	2.2	-	-	1.8	-	1.9	1.7	3.4	-
267	6.2	8.1	2.5	0.9	-	2.6	3.0	2.2	1.8	5.2	0.8	1.0	-	2.3	1.1	-	2.3	-	2.9	1.7	4.1	-
268	6.1	8.0	2.4	0.6	-	2.5	3.0	2.0	1.5	5.3	0.6	0.8	-	2.2	0.9	-	2.1	-	2.6	1.7	3.9	-
269	6.6	6.0	2.0	1.8	0.5	2.4	3.8	2.0	2.0	5.4	1.2	1.6	-	2.9	1.5	0.8	2.3	0.6	2.5	2.0	4.5	0.5
270	3.5	3.9	1.5	-	-	2.1	1.7	0.9	1.0	3.3	-	-	-	0.9	-	-	0.9	-	1.1	-	2.3	-
271	6.1	7.2	2.9	1.7	-	3.5	3.6	2.7	2.5	5.4	3.0	2.0	-	3.1	2.1	-	3.0	-	3.1	3.0	4.9	-
272	6.3	6.7	5.4	4.8	-	5.7	5.6	5.0	5.5	6.0	4.9	4.9	-	5.3	4.7	-	5.4	-	5.3	5.1	6.2	-
273	11.8	6.9	5.5	4.4	1.3	4.2	7.0	4.2	3.9	10.0	1.9	3.6	-	6.5	4.5	1.4	4.0	-	3.2	4.3	9.2	1.4
274	12.5	8.3	7.6	6.7	4.4	6.6	8.7	6.5	6.1	11.2	4.9	6.0	-	8.2	7.0	4.4	6.7	4.3	6.0	6.4	10.8	4.3
275	6.6	8.6	2.8	2.0	-	3.0	3.6	2.4	2.3	5.4	2.7	1.9	-	2.9	2.1	-	2.8	-	2.9	2.5	4.6	-
276	6.3	6.5	4.1	4.3	-	4.6	4.2	4.2	3.8	5.9	-	4.3	-	3.9	3.7	-	4.0	-	3.6	3.9	6.0	-

Parcel ID	Change in Depth (Project - Existing) During Wet Days (ft), by WY 1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg. Wet Day Inundated Area (%)	Avg. Wet Day Depth (ft)	Avg. Change in Depth During Wet
249	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	54.5	2.5	0.0
250	0.1	-0.1	-0.2	0.1	-	0.1	0.1	0.0	0.1	0.1	-0.5	0.1	-	0.1	0.0	-	0.1	-	0.0	0.1	0.1	-	70.0	4.3	0.0
251	-0.3	0.0	-0.1	0.0	-	-0.2	0.0	-0.1	0.1	-0.4	0.2	0.1	-	0.0	0.0	-	0.0	-	-0.1	-0.2	-0.1	-	87.3	4.5	-0.1
252	0.1	-1.1	0.1	0.2	-	-0.1	-0.1	0.1	0.1	0.1	0.1	0.3	-	0.2	-0.1	-	0.1	-	-0.3	-0.2	0.0	-	86.5	4.7	0.0
253	0.1	-0.2	0.3	0.2	-	0.1	0.1	0.1	0.2	0.1	-0.1	0.1	-	0.2	0.1	0.0	0.1	-	0.0	0.1	0.1	0.1	71.7	3.4	0.1
254	-0.3	0.0	-0.1	0.0	-	-0.1	-0.1	-0.1	-0.1	-0.3	-0.1	0.1	-	0.1	0.0	-	0.0	-	-0.1	0.0	0.0	-	74.5	4.0	-0.1
255	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256	0.0	0.0	0.0	-0.2	-	0.0	0.0	0.0	0.1	0.0	-	0.1	-	0.1	0.0	-	0.0	-	0.0	0.0	-0.1	-	68.8	2.8	0.0
257	0.1	0.0	-0.1	-0.1	-	-0.8	0.0	-0.1	-0.3	0.0	0.0	0.0	-	-0.1	0.0	-	-0.1	-	0.0	0.1	0.0	-	88.0	4.5	-0.1
258	-0.4	0.0	-0.5	0.3	-	-0.2	-0.1	0.0	0.1	-0.4	0.1	0.2	-	-0.1	-0.1	-	0.0	-	-0.1	0.0	-0.4	-	81.9	4.0	-0.2
259	0.0	0.0	0.0	-	-	-0.2	0.0	0.1	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	88.6	3.8	0.0
260	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.1	-0.1	-	0.1	-	0.0	-0.1	-	0.0	-	0.0	-0.1	0.0	-	83.5	4.0	0.0
261	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.1	0.0	-	-	-	0.0	-	-	0.0	-	-0.1	0.0	0.0	-	77.3	3.1	0.0
262	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.1	-	0.0	0.0	-	-0.1	-	0.0	0.0	0.0	-	70.2	4.6	0.0
263	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	88.1	4.1	0.0
264	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.0	66.1	3.4	0.1
265	-0.1	-0.2	-0.2	0.1	-	-0.1	0.0	-0.1	0.1	0.1	0.2	0.0	-	0.1	0.1	-	0.1	-	0.1	0.1	0.0	-	78.7	4.7	0.0
266	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	75.5	3.8	0.0
267	-0.1	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-0.2	0.0	0.0	-	82.9	3.7	0.0
268	0.0	0.0	0.0	0.0	-	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	81.3	3.7	0.0
269	0.1	0.0	0.2	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	-	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	74.9	3.4	0.1
270	0.0	0.0	0.0	-	-	0.0	0.0	-0.1	0.0	-0.1	-	-	-	0.0	-	-	0.1	-	-0.2	-	0.0	-	79.9	2.9	0.0
271	-0.4	0.0	-0.2	0.0	-	-0.4	-0.2	-0.1	-0.3	-0.4	0.1	-0.1	-	-0.3	0.0	-	-0.2	-	-0.1	-0.3	-0.3	-	79.8	4.2	-0.2
272	0.0	0.0	-0.1	0.1	-	0.1	0.0	0.0	-0.2	0.0	0.1	0.0	-	0.1	0.0	-	0.1	-	0.0	0.1	0.0	-	50.0	5.9	0.0
273	0.0	0.0	0.3	0.3	0.0	0.2	0.1	0.3	0.1	0.1	0.0	0.3	-	0.2	0.2	0.1	0.0	-	0.0	0.1	0.1	0.0	89.3	6.0	0.1
274	0.0	0.0	0.2	0.2	0.0	0.2	0.1	0.2	0.1	0.0	0.0	0.1	-	0.1	0.1	0.1	0.0	0.0	0.1	-0.1	0.0	0.0	55.7	7.8	0.1
275	-0.3	-0.4	-0.2	0.3	-	0.1	0.1	0.0	0.1	0.0	0.1	0.2	-	0.0	0.1	-	0.0	-	0.0	0.0	0.0	-	81.0	4.0	0.0
276	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	82.7	5.1	0.0

Notes:
"-" = NA

Attachment D

Waterfowl Season Summary WYs 1997 - 2018

Owner	APN	Parcel ID	Parcel Area	Average Dry Day Inundated Area (%), Existing Conditions by WY																					
				1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TARKE FARMS LP	13-070-035	0	117	0.7	0.1	0.8	0.0	0.0	0.7	0.9	0.5	0.5	1.0	0.0	0.2	0.0	0.7	0.6	0.0	1.5	0.0	0.9	0.6	0.9	0.1
TARKE FARMS LP	13-070-040	1	198	2.2	0.2	1.2	0.2	0.0	1.3	3.7	1.7	1.1	1.8	0.1	0.6	0.0	1.0	1.1	0.0	1.9	0.0	1.1	1.1	2.2	0.0
TARKE LIV TR	13-070-044	2	82	0.6	0.0	0.1	0.0	0.0	0.2	0.3	0.3	0.2	0.5	0.0	0.0	0.0	0.2	0.1	0.0	0.2	0.0	0.6	0.0	0.5	0.0
TARKE FARMS LP	13-070-045	3	113	0.0	0.5	0.3	0.0	0.0	0.0	0.3	0.2	0.5	0.0	0.3	0.2	0.0	0.0	0.8	0.1	0.1	0.0	0.0	0.1	0.0	0.1
TARKE LIV TR	13-070-051	4	70	1.3	2.9	3.1	0.6	0.0	3.7	0.9	2.0	2.2	0.6	0.9	1.5	0.0	0.3	3.2	1.3	1.6	0.3	2.0	1.0	1.5	0.4
TARKE LIV TR	13-070-052	5	9	3.9	3.4	6.4	4.1	0.0	7.8	5.0	6.8	4.3	4.8	1.1	4.6	0.0	3.1	6.3	1.5	3.5	0.2	3.6	2.7	6.4	0.4
TARKE BROS ESTATE LLC	13-070-053	6	76	1.6	0.1	0.7	0.1	0.0	0.6	1.5	0.7	0.5	2.0	0.0	0.2	0.0	0.7	0.3	0.0	1.1	0.0	0.7	0.4	1.6	0.0
TARKE LIV TR ETAL	13-070-054	7	87	1.3	0.0	0.5	0.0	0.0	0.3	1.2	0.4	0.3	0.9	0.0	0.0	0.0	0.7	0.0	0.0	1.0	0.0	0.5	0.4	0.9	0.0
TARKE LIV TR ETAL	13-070-056	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TARKE LIV TR	13-080-008	9	126	1.4	2.7	3.0	0.6	0.0	3.3	0.7	2.3	2.0	2.0	0.8	1.8	0.0	0.6	2.9	1.2	1.3	0.2	1.7	1.3	1.4	0.4
TARKE LIV TR ETAL	13-080-028	10	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TARKE BROS ESTATE LLC	13-080-033	11	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TARKE REV TR ETAL	13-080-043	12	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TARKE FARMS LP	13-090-020	13	3	5.2	1.9	0.5	0.0	0.0	1.1	3.7	1.1	0.9	3.8	0.0	0.0	0.0	1.6	0.0	0.0	0.5	0.0	0.9	0.2	4.2	0.0
ANDERSON R & J PROPS LP	13-090-026	14	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DAVIS MARGARET S	13-090-122	15	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TARKE REV TR ETAL	13-140-001	16	84	0.2	0.0	0.4	0.3	0.0	0.5	0.3	0.3	0.1	0.0	0.0	0.3	0.0	0.2	0.0	0.0	0.2	0.0	0.3	0.1	0.3	0.1
TARKE LIV TR	13-140-008	17	167	0.7	0.0	0.3	0.1	0.0	0.7	1.2	0.8	0.7	0.7	0.0	0.4	0.0	0.4	0.5	0.0	0.7	0.0	0.6	0.5	1.1	0.1
TARKE LIV TR	13-140-010	18	13	1.0	0.1	0.6	0.6	0.0	1.1	2.3	1.2	1.2	1.2	0.1	0.7	0.0	0.5	1.2	0.0	0.9	0.0	0.5	0.5	1.5	0.0
BRYANT ROBERT/KATHRINE TR ETAL	13-140-040	19	17	0.3	0.0	0.1	0.2	0.0	0.0	0.1	0.3	0.2	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.0	0.0	0.2	0.6	0.0
BRYANT ROBERT/KATHRINE TR ETAL	13-140-047	20	182	0.5	0.9	0.5	0.0	0.0	0.8	0.0	0.3	0.1	0.6	0.0	0.5	0.0	0.0	0.2	0.1	0.3	0.0	0.2	0.1	0.2	0.0
DUSTIN SHAWN D/JANET N	13-140-050	21	2	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
DUSTIN SHAWN ETAL	13-140-050	22	2	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
MEYER ENTERPRISES LLC	13-140-061	23	47	1.3	0.2	0.7	1.3	0.0	1.8	2.7	1.8	1.6	1.3	0.2	1.3	0.0	1.1	2.1	0.0	1.0	0.0	0.5	0.9	2.5	0.0
MEYER ENTERPRISES LLC	13-140-083	24	2	2.1	0.0	0.9	0.0	0.0	0.7	1.9	0.7	0.4	2.2	0.0	0.0	0.0	1.3	0.0	0.0	1.3	0.0	1.2	0.5	1.5	0.0
GIAMPAOLI JENNIFER F ETAL	13-140-084	25	6	0.9	0.0	0.4	0.0	0.0	0.1	0.9	0.5	0.1	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.9	0.0	0.5	0.1	0.4	0.0
GIAMPAOLI JENNIFER F ETAL	13-140-084	26	255	0.1	3.9	3.4	0.7	0.4	2.8	0.9	2.4	2.3	1.1	1.3	1.4	0.0	0.2	4.1	1.1	2.3	0.4	1.5	1.7	1.1	1.0
GIAMPAOLI JENNIFER F ETAL	13-140-085	27	136	0.0	1.9	0.7	0.5	0.4	0.8	0.0	0.9	0.8	0.1	0.1	0.2	0.0	0.2	0.1	0.1	0.4	0.0	0.6	0.4	0.2	0.2
MEYER DONAL/BETTY M TR ETAL	13-140-086	28	6	1.6	0.2	0.8	1.4	0.0	1.9	3.2	2.2	1.6	1.6	0.2	1.1	0.0	1.3	2.5	0.0	0.9	0.0	0.4	0.8	2.5	0.0
MEYER SURVIVOR'S TRUST	13-140-095	29	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HENSEN REV LIV '09 TR ETAL	13-150-001	30	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NALL REV I-V '03 TR ETAL	13-150-006	31	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NALL DAVID E ETAL	13-150-006	32	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TARKE BROS ESTATE LLC	13-150-021	33	69	0.5	0.9	1.4	0.3	0.1	1.1	0.4	0.7	0.7	0.3	0.4	0.5	0.0	0.1	0.7	0.3	0.4	0.1	1.2	0.4	0.5	0.0
TARKE BROS ESTATE LLC	13-150-022	34	51	0.4	0.6	1.8	0.3	0.0	0.9	0.0	0.8	0.5	0.0	0.6	0.5	0.0	0.0	0.7	0.2	0.3	0.0	0.9	0.2	0.3	0.0
TARKE BROS ESTATE LLC	13-150-023	35	179	1.6	0.4	1.4	2.0	0.0	2.8	3.6	2.8	1.8	2.0	0.2	1.6	0.0	1.6	2.8	0.1	1.5	0.0	0.6	1.1	3.2	0.0
SAC/SAN JOAQUIN DRAINAGE DIST	13-150-026	36	3	0.3	0.7	1.4	0.7	0.0	0.6	0.5	2.2	0.3	1.4	0.1	0.7	0.0	0.5	0.6	0.2	0.4	0.0	0.6	0.5	1.8	0.0
DEPT OF WATER RESOURCES	13-150-034	37	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROBINSON DENNIS R/MICHELLE L	13-150-043	38	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MERIDIAN WALNUT HULLING ASSOC	13-150-044	39	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MERIDIAN WALNUT HULLING ASSOC	13-150-046	40	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HENSEN REV LIV '09 TR ETAL	13-150-049	41	7	2.7	1.9	4.1	3.4	0.0	5.8	4.5	4.6	3.0	3.8	0.5	2.9	0.0	2.7	3.9	0.7	2.2	0.1	2.3	1.9	4.4	0.0
HENSEN REV LIV '09 TR ETAL	13-150-050	42	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TAYLOR REV LIV '18 TR ETAL	13-150-051	43	52	2.6	4.8	3.9	0.8	1.3	5.0	1.9	4.0	4.2	1.7	2.2	3.0	0.6	0.8	3.4	1.7	2.8	0.7	2.7	2.1	2.3	0.8
K H KING FAM LP ETAL	13-150-053	44	127	0.4	0.9	1.4	0.2	0.0	0.8	0.1	0.7	0.5	0.1	0.5	0.4	0.0	0.0	1.0	0.6	0.7	0.0	1.0	0.2	0.6	0.0
K H KING FAM LP ETAL	13-150-054	45	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TARKE BROS ESTATE LLC	13-150-070	46	2	2.7	1.3	3.7	3.5	0.0	5.6	4.8	4.5	2.7	3.2	0.4	2.9	0.0	2.9	4.8	0.7	2.3	0.1	1.7	2.0	4.7	0.1
TARKE BROS ESTATE LLC	13-150-074	47	40	0.9	0.2	0.3	0.6	0.0	0.7	1.7	1.5	0.9	0.7	0.1	0.6	0.0	0.6	1.3	0.0	0.5	0.0	0.3	0.6	1.1	0.0
RHODES-STOCKTON BEAN CO-OP	13-150-077	48	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON SURVIVORS '00 TR ETAL	13-150-083	49	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TAYLOR REV LIV '18 TR	13-150-085	50	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ANDERSON R & J PROPS LP	13-150-091	51	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GIAMPAOLI JENNIFER F ETAL	13-190-013	52	53	0.0	0.4	0.5	0.3	0.0	0.8	0.0	0.2	0.3	0.1	0.2	0.1	0.0	0.0	1.2	0.2	0.1	0.1	0.3	0.4	0.3	0.0
ROGERS FRANK A JR ETAL	13-190-014	53	81	0.2	0.0	0.5	0.0	0.0	0.3	0.0	0.3	0.0	0.2	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.3	0.0
GIAMPAOLI JENNIFER F ETAL	13-190-043	54	15	0.0	0.9	1.0	0.3	0.0	0.3	0.2	0.4	0.5	0.2	0.4	0.5	0.0	0.0	1.4	0.2	0.4	0.1	0.2	0.4	0.4	0.0
ROGERS FRANK A JR ETAL	13-340-001	55	135	0.8	0.1	1.1	0.0	0.0	0.7	0.8	0.8	0.4	0.4	0.0	1.1	0.0	0.1	0.6	0.1	1.1	0.0	0.9	0.5	0.7	0.1
ONEILL SEAN ETAL	13-340-003	56	10	0.2	0.2	1.5	0.1	0.0	0.1	0.3	0.6	0.8	0.2	0.1	0.3	0.0	0.2	1.5	0.2	2.0	0.1	2.5	0.1	0.1	0.3
ROGERS FRANK A JR ETAL	13-340-004	57	8	0.6	0.3	0.2	0.0	0.0	0.2	1.0	0.3	0.2	0.2	0.0	0.4	0.0	0.0	0.1	0.1	0.2	0.1	0.7	0.2	0.9	0.1
ROGERS FRANK A JR ETAL	13-340-005	58	135	0.3	0.2	1.4	0.0	0.0	1.3	0.5	1.5	0.9	0.2	0.0	0.2	0.0	0.3	0.9	0.1	1.4	0.1	1.7	0.1	0.1	0.2
SAC/SAN JOAQUIN DRAINAGE DIST	13-340-006	59	54	0.8	0.7	2.0	0.1	0.1	1.9	1.3	0.6	1.7	0.8	0.0	0.6	0.0	0.6	1.3	0.5	2.3	0.4	2.9	0.3	0.4	0.8
ONEILL SEAN ETAL	13-340-009	60	208	0.3	0.4	3.2	2.9	0.1	8.0	0.7	1.7	1.6	0.5	0.1	2.8	0.0	0.4	4.2	0.3	3.8	0.2	4.4	0.1	0.2	0.5
SAC/SAN JOAQUIN DRAINAGE DIST	13-340-022	61	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JAEGER WILLIAM L/PATRICIA	13-340-025	62	109	0.3	0.3	1.6	0.1	0.0	1.5	0.9	1.7	1.7	0.3	0.0	0.6	0.0	0.4	0.7	0.2	1.6	0.1	1.8	0.1	0.3	0.5
CENTRAL LAND CO	13-340-027	63	108	0.7	0.6	1.3	0.5	0.1	2.5	1.0	0.8	1.1	0.9	0.1	2.2	0.1	0.6	2.3	0.6	2.3	0.4	2.1	0.4	0.2	0.5
CENTRAL LAND CO	13-340-028	64	5	1.2	0.0	0.1	0.5	0.0	0.5	0.5	0.5	0.8	0.6	0.0	0.5	0.0	0.3	0.8	0.0	0.6	0.0	0.3	0.3	0.6	0.0
LAUGHLIN PATRICK TR ETAL	13-340-032	65	80	2.2	0.3	0.5	0.2	0.1	0.7	2.8	1.1	0.8	1.6	0.1	0.6	0.0	0.9	0.1	0.3	1.7	0.2	1.7	0.7	1.9	0.5
FISH & WILDLIFE SERVICE	13-340-033	66	72	1.2	0.1	1.1	0.2	0.0	0.7	2.0	1.0	1.0	0.9	0.0	0.4	0.0	0.6	0.5	0.1	1.5	0.1	1.2	0.8	1.3	0.2
CENTRAL LAND CO	13-340-034	67	61	0.5	0.1	4.8	0.0	0.0	3.4	2.6	3.7	3.7	1.8	0.0	0.2	0.0	1.5	0.0	0.1	6.9	0.0	5.2	2.8	3.6	0.4
FISH & WILDLIFE SERVICE	13-340-039	68	2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0
FISH & WILDLIFE SERVICE	13-340-040	69	57	0.9	0.0	0.2	0.0	0.0	0.2	1.4	0.7	0.3	0.8	0.0	0.1	0.0	0.5	0.0	0.0	0.7	0.0	1.0	0.4	1.2	0.3
SAC/SAN JOAQUIN DRAINAGE DIST	13-340-044	70	98	0.6	0.1	0.3	0.7	0.0	0.9	1.1	1.1	0.9	0.5	0.0	0.6	0.0	0.6	1.7	0.1	0.5	0.0	0.2	0.4	1.7	0.0
SAC/SAN JOAQUIN DRAINAGE DIST	13-340-045	71	89	1.7	0.1	1.1	1.3	0.0	3.6	2.5	1.4	1.5	1.8	0.1	0.8	0.0	1.3	1.2	0.0	2.2	0.0	1.3	1.1	2.0	0.1
SAC/SAN JOAQUIN DRAINAGE DIST	13-340-046	72	54	1.0	0.2	0.6	0.0	0.0	0.4	1.7	0.6	0.9	0.9	0.0	0.4	0.0	0.3	0.4	0.1	0.6	0.1	0.8	0.6	1.2	0.1
SAN/SAN JOAQUIN DRAINAGE DIST	21-100-008	73	38	2.7	0.3	4.3	2.4	0.0	2.3	4.4	3.3	1.9	4.1	0.0	1.2	0.0	1.2	3.3	0.1	1.3	0.0	1.9	1.9	1.8	0.0
SAC/SAN JOAQUIN DRAINAGE DIST	21-100-009	74	57	0.2	0.0	0.6	0.3	0.0	0.3	0.7	0.2	0.2	0.1	0.0	0.5	0.0	0.3	0.1	0.0	0.3	0.0	0.4	0.6	0.8	0.0
SAC/SAN JOAQUIN DRAINAGE DIST	21-100-012	75	25	2.0	0.5	2.2	1.8	0.0	1.0	2.5	2.0	1.5	2.3	0.0	1.3	0.0	0.7	1.7	0.1	1.0	0.0	1.1	0.8	1.6	0.0
SAC/SAN JOAQUIN DRAINAGE DIST	21-110-002	76	25	2.2	0.3	3.2	2.0	0.0	1.9	3.0	2.7	1.5	3.2	0.2	1.2	0.0	0.9	2.8	0.1	1.2	0.0	1.5	1.1	1.2	0.0
DEPT OF FISH & GAME	21-110-006	77	15	3.1	0.0	1.4	0.4	0.0	1.1	3.2	1.3	0.7	1.6	0.3	0.4	0.0	0.9	0.8	0.0	1.3	0.0	1.5	0.8	1.8	0.0
FISH & WILDLIFE SERVICE	21-140-001	78	77	1.4	0.4	0.4	0.3	0.2	0.6	2.2	0.6	0.4	0.9	0.2	0.7	0.1	0.7	0.2	0.4	1.5	0.3	1.1	0.4	1.3	0.2
FISH & WILDLIFE SERVICE	21-140-002	79	21	2.1	0.8	1.9	1.6	0.1	2.4	2.9	2.0	1.6	2.0	0.4	1.5	0.1	1.9	2.7	0.3	2.4	0.2	1.9	1.4	2.0	0.3
FISH & WILDLIFE SERVICE	21-140-003	80	286	1.7	0.3	2.0	0.2	0.1	2.5	3.5	2.4	2.4	2.3	0.1	1.1	0.1	2.1	1.8	0.3	5.2	0.2	3.3	2.3	3.2	0.5
FISH & WILDLIFE SERVICE	21-140-005	81	40	0.2	0.2	0.6	0.3	0.0	0.5	0.8	0.4	0.3	0.6	0.1	1.2	0.0	0.8	0.7	0.3	1.3	0.2	1.3	0.4	1.0	0.2
FISH & WILDLIFE SERVICE	21-140-008	82	58	1.5	0.1	3.2	1.9	0.0	3.9	2.8	3.1	2.7	1.7	0.2	1.0	0.0	1.4	1.0	0.0	4.3	0.0	3.4	1.6	2.4	0.2
FISH & WILDLIFE SERVICE	21-140-009	83	132	0.6	0.3	1.9	0.4	0.2	0.8	0.8	1.0	1.3	1.1	0.2	1.4	0.2	0.5	2.1	0.6	3.3	0.4	3.2	0.4	0.3	0.4
FISH & WILDLIFE SERVICE	21-140-010	84	27	0.3	0.3	0.3	0.5	0.2	1.1	0.8	0.4	0.2	0.5	0.2	0.8	0.2	0.3	0.6	0.5	1.1	0.3	1.6	0.4	0.0	0.3
FISH & WILDLIFE SERVICE	21-140-011	85	151	0.4	0.5	1.1	0.6	0.1	1.9	1.4	0.9	0.8	0.8	0.1	1.5	0.1	0.5	1.3	0.4	1.9	0.3	1.9	1.1	0.9	0.5
FISH & WILDLIFE SERVICE	21-140-013	86	9	0.6	0.9	2.2	0.4	0.1	1.2	1.1	1.7	2.0	0.7	0.0	2.2	0.0	0.6	1.1	0.6	2.9	0.3	4.6	0.0	0.3	1.4
FISH & WILDLIFE SERVICE	21-140-014	87	48	0.2	0.3	0.7	0.2	0.1	0.7	1.4	0.5	0.4	0.8	0.1	0.5	0.1	0.9	0.6	0.2	1.6	0.2	1.2	0.6	2.0	0.1
FISH & WILDLIFE SERVICE	21-140-015	88	7	0.1	0.1	0.8	0.1	0.0	0.1	0.6	0.3	0.4	0.2	0.0	0.4	0.0	0.3	0.0	0.1	1.7	0.1	1.7	0.0	0.4	0.4
FISH & WILDLIFE SERVICE	21-180-001	89	54	1.8	0.3	4.9	0.7	0.0	5.3	2.0	4.5	3.2	1.6	0.0	1.7	0.0	0.3	1.4	0.2	6.3	0.1	5.1	1.5	3.1	0.3
FISH & WILDLIFE SERVICE	21-180-002	90	97	0.2	0.4	1.5	0.7	0.3	1.0	0.6	1.1	1.1	0.5	0.2	3.1	0.2	0.4	2.6	0.5	1.8	0.3	2.5	0.2	0.0	0.2
FISH & WILDLIFE SERVICE	21-180-003	91	120	0.5	0.3	2.1	0.5	0.2	2.8	0.8	2.4	2.4	0.3	0.1	0.9	0.2	0.3	1.2	0.6	3.4	0.2	3.3	0.2	0.3	0.3
FISH & WILDLIFE SERVICE	21-180-004	92	149	3.1	5.7	8.0	3.8	3.4	7.6	2.0	6.5	4.0	4.4	4.2	5.1	3.0	3.2	5.5	4.4	5.4	3.0	5.6	2.2	3.4	3.4
FISH & WILDLIFE SERVICE	21-180-005	93	179	0.5	0.3	4.0	0.9	0.2	4.1	1.5	3.4	2.3	0.9	0.1	1.0	0.2	0.3	2.5	0.5	3.3	0.4	3.5	0.6	0.6	0.5
FISH & WILDLIFE SERVICE	21-180-006	94	20	0.1	0.3	5.3	0.1	0.0	3.9	2.8	3.8	3.3	1.7	0.0	1.4	0.0	1.2	4.1	0.3	6.0	0.2	6.2	2.2	3.1	1.5
FISH & WILDLIFE SERVICE	21-180-010	95	97	3.6	5.1	6.8	4.1	3.6	5.7	3.1	6.4	5.0	4.5	3.7	5.1	3.0	3.7	5.2	4.1	5.6	2.9	3.7	2.7	4.9	3.4
FISH & WILDLIFE SERVICE	21-180-011	96	97	1.2	0.2	2.1	0.6	0.2	1.7	1.4	2.3	1.7	0.8	0.2	1.7	0.2	0.3	0.9	0.4	2.1	0.2	1.4	1.0	0.9	0.1
FISH & WILDLIFE SERVICE	21-240-001	97	99	1.2	2.2	5.4	1.7	1.5	3.4	0.7	2.7	2.9	1.7	1.7	2.8	1.4	1.5	3.4	1.7	3.6	1.4	4.1	0.7	1.8	1.8
DEPT OF FISH & GAME	21-240-013	98	23	1.1	0.3	0.1	0.0	0.0	0.1	0.6	0.3	0.1	1.0	0.0	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.2	0.1	0.9	0.0
DEPT OF FISH & GAME	21-240-014	99	21	0.6	0.2	0.0	0.0	0.0	0.1	0.5	0.1	0.0	0.6	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.1	0.1	0.6	0.0
SAC/SAN JOAQUIN DRAINAGE DIST	21-240-015	100	18	1.9	0.1	6.6	0.8	0.0	6.3	2.8	5.3	5.0	1.5	0.0	2.7	0.0	1.0	3.1	0.1	5.1	0.1	4.1	2.2	4.4	0.2
CREPS REV '05 TR ETAL	21-240-016	101	426	0.5	0.7	1.9	0.6	0.1	1.3	1.0	0.1	0.3	0.8	0.1	2.3	0.2	0.6	1.7	0.5	2.3	0.4	2.2	0.1	0.4	0.3
FISH & WILDLIFE SERVICE	21-240-023	102	101	0.3	0.4	2.2	1.2	0.1	0.8	0.8	0.1	0.2	0.8	0.0	2.1	0.2	0.3	1.9	0.4	3.1	0.3	2.9	0.2	0.4	0.4
CREPS REV '05 TR ETAL	21-240-025	103	11	1.3	0.1	4.2	0.3	0.0	4.3	1.8	3.6	3.5	1.0	0.0	3.2	0.0	0.5	1.7	0.2	3.4	0.1	2.0	1.3	3.1	0.2
CREPS REV '05 TR ETAL	21-240-028	104	19	0.2	0.3	0.6	0.1	0.0	0.3	0.4	0.7	0.1	0.3	0.0	1.5	0.1	0.3	0.5	0.2	0.7	0.2	1.0	0.2	0.0	0.3
CREPS REV '05 TR ETAL	21-240-029	105	91	1.1	0.4	5.6	0.3	0.1	5.4	2.8	5.0	4.3	0.6	0.0	4.1	0.1	0.4	2.2	0.3	3.8	0.3	2.8	1.5	2.8	0.4
CREPS REV '05 TR ETAL	21-240-030	106	8	1.3	0.5	4.8	0.5	0.1	4.6	2.5	4.7	3.7	1.6	0.0	3.7	0.2	0.8	2.2	0.5	3.7	0.4	2.9	1.2	2.6	0.4
CREPS REV '05 TR ETAL	21-240-031	107	57	0.5	0.7	4.0	0.4	0.4	4.3	2.1	3.3	3.5	0.6	0.3	2.9	0.3	0.6	2.0	0.4	3.1	0.3	2.6	1.3	1.2	0.3
CREPS REV '05 TR ETAL	21-240-032	108	5	0.3	0.3	0.2	0.0	0.0	0.4	0.0	0.2	0.2	0.3	0.4	0.1	0.0	0.1	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.1
CREPS REV '05 TR ETAL	21-240-033	109	13	0.2	0.2	0.9	0.5	0.2	0.5	0.1	0.7	0.2	0.3	0.1	0.3	0.1	0.2	0.7	0.1	0.9	0.1	1.3	0.2	0.0	0.4
DEPT OF FISH & GAME	21-250-009	110	44	0.0	1.1	0.9	0.0	0.0	1.1	0.3	1.2	0.2	0.0	0.0	0.7	0.0	0.0	1.1	0.2	0.5	0.0	0.1	0.0	0.4	0.0
SAC/SAN JOAQUIN DRAINAGE DIST	21-250-010	111	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/SAN JOAQUIN DRAINAGE DIST	21-260-003	112	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPT OF FISH & GAME	21-260-004	113	42	0.1	0.0	0.3	0.0	0.0	0.3	0.1	0.3	0.2	0.0	0.0	0.3	0.0	0.2	0.2	0.0	0.2	0.0	0.0	0.2	1.0	0.0
SAC/SAN JOAQUIN DRAINAGE DIST	21-290-001	114	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPT OF FISH & GAME	21-290-002	115	46	0.1	0.0	0.2	0.4	0.0	0.7	0.8	0.4	0.9	0.4	0.0	0.6	0.0	0.7	0.2	0.0	0.3	0.0	0.2	0.2	0.6	0.0
DEPT OF FISH & GAME	21-290-003	116	33	4.7	1.2	2.2	0.7	0.0	1.7	3.6	1.7	1.0	3.8	0.2	0.6	0.0	1.7	1.1	0.0	1.6	0.0	1.5	1.1	3.5	0.0
DEPT OF FISH & GAME	21-290-012	117	33	1.0	0.0	1.6	1.0	0.0	1.5	2.5	1.4	1.3	1.6	0.0	0.6	0.0	0.8	1.6	0.0	0.8	0.0	1.1	0.6	1.0	0.0
DEPT OF FISH & GAME	21-300-001	118	34	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.0
SUTTER MUTUAL WATER CO	21-310-021	119	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CREPS REV '05 TR ETAL	24-070-001	120	150	0.5	3.4	1.3	0.6	0.1	1.1	0.6	0.3	0.3	0.8	0.1	0.6	0.2	0.6	2.1	1.0	1.8	0.2	2.8	0.4	0.0	0.7
SAC/SAN JOAQUIN DRAINAGE DIST	24-070-009	121	9	0.4	1.9	1.3	0.3	0.0	1.6	1.2	0.4	0.6	0.5	0.0	1.5	0.2	0.4	0.5	0.9	2.0	0.4	1.2	0.4	0.0	0.4
DEPT OF FISH & GAME	24-080-006	122	7	0.6	0.1	0.5	0.0	0.0	0.1	0.4	0.1	0.1	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.4	0.2	0.4	0.0
CREPS REV '05 TR ETAL	24-080-007	123	237	0.6	0.4	1.9	0.5	0.1	0.1	0.3	0.1	0.1	0.2	0.1	0.5	0.3	0.4	1.3	0.6	1.4	0.3	2.1	0.1	0.0	0.4
DEPT OF FISH & GAME	24-080-010	124	38	0.6	0.0	1.1	0.7	0.0	1.0	1.2	1.4	1.1	1.2	0.1	0.5	0.0	0.6	1.4	0.0	0.6	0.0	1.0	0.4	0.6	0.0
DEPT OF FISH & GAME	24-110-007	125	23	0.2	0.0	0.2	0.1	0.0	0.2	0.3	0.5	0.4	0.6	0.0	0.3	0.0	0.1	0.1	0.0	0.5	0.0	0.0	0.3	1.0	0.0
TJ HOLDINGS LP	24-120-001	126	150	3.5	5.2	5.2	3.2	3.2	4.7	4.0	4.2	4.5	3.7	3.3	4.5	3.2	3.4	5.2	4.6	6.8	3.3	8.9	4.0	3.0	3.6
TJ HOLDINGS LP	24-120-002	127	72	1.1	2.2	2.1	1.1	1.5	1.7	0.7	2.5	1.9	1.9	1.8	1.7	1.0	1.2	1.7	1.4	1.6	0.9	1.3	2.5	1.9	1.8
DEPT OF FISH & GAME	24-120-003	128	31	0.6	1.1	1.5	0.2	0.0	1.7	0.4	1.6	0.4	0.0	0.0	1.1	0.0	0.0	1.5	0.2	1.1	0.0	0.3	0.4	1.3	0.0
SAC/SAN JOAQUIN DRAINAGE DIST	24-120-010	129	32	0.4	0.0	1.8	0.1	0.0	1.8	0.5	1.4	0.9	0.0	0.0	1.1	0.0	0.0	1.0	0.0	1.4	0.0	1.0	0.5	1.1	0.1
SAC/SAN JOAQUIN DRAINAGE DIST	24-120-013	130	2	0.8	0.0	0.6	0.5	0.0	1.3	0.7	0.7	0.8	0.5	0.0	0.1	0.0	0.4	0.4	0.0	0.6	0.0	0.4	0.4	0.5	0.0
TJ HOLDINGS LP	24-120-017	131	276	0.0	0.1	3.9	0.0	0.0	3.9	1.3	3.3	3.0	0.4	0.1	1.5	0.0	0.0	1.7	0.0	3.1	0.1	2.0	1.0	0.7	0.5
SAC/SAN JOAQUIN DRAINAGE DIST	24-120-018	132	23	0.2	3.0	1.7	0.2	0.1	1.8	0.4	0.9	1.1	0.2	0.3	0.4	0.0	0.0	2.3	0.5	3.7	0.0	3.8	0.6	0.8	0.4

Parcel ID	Average Dry Day Depth (ft), Existing Conditions by WY																					
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0	0.3	0.7	0.2	-	-	0.2	0.2	0.2	0.2	0.4	-	0.4	-	0.2	0.2	-	0.2	-	0.2	0.2	0.2	0.1
1	0.7	0.9	0.9	1.6	0.1	1.1	0.9	1.0	0.7	0.9	0.7	1.1	-	0.9	1.0	0.8	0.6	0.3	0.8	0.7	1.0	0.2
2	0.8	0.9	0.8	0.8	-	0.7	0.8	0.8	0.7	0.7	1.0	0.7	-	0.7	0.8	-	0.6	-	0.7	0.8	0.7	0.3
3	0.1	0.2	0.2	0.2	0.1	-	0.2	0.5	0.1	-	0.3	0.4	-	-	0.1	0.4	0.1	0.1	-	0.2	-	0.2
4	0.5	0.3	0.4	0.5	0.1	0.4	0.2	0.4	0.3	0.2	0.3	0.3	-	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.2
5	1.0	0.5	0.8	1.3	-	0.9	1.2	1.0	0.8	1.0	0.4	1.0	-	1.3	0.9	0.6	0.9	0.3	0.7	0.8	1.1	0.2
6	2.0	2.8	2.5	2.4	-	2.4	2.1	2.4	2.0	2.2	2.3	2.2	-	2.4	2.1	2.8	2.1	-	2.4	2.5	2.2	-
7	0.9	0.2	0.7	-	-	0.7	0.8	0.6	0.6	0.8	0.1	0.2	-	1.0	0.3	-	0.8	-	0.7	0.8	0.7	0.2
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	0.7	0.4	0.5	0.6	0.2	0.5	0.3	0.6	0.4	0.7	0.4	0.4	-	0.7	0.6	0.4	0.4	0.3	0.4	0.4	0.5	0.2
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	2.4	3.1	2.8	-	-	2.3	1.9	1.8	1.3	1.9	-	-	-	1.3	-	-	1.1	-	1.4	0.4	2.1	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	0.1	0.1	0.1	0.1	-	0.2	0.1	0.1	0.1	0.1	-	0.1	-	0.3	0.1	-	0.1	-	0.1	0.1	0.1	0.1
17	0.4	0.6	0.6	0.7	-	0.7	0.5	0.6	0.8	0.5	1.0	0.7	-	0.6	0.8	-	0.4	-	0.4	0.5	0.5	0.1
18	1.3	1.5	1.6	1.0	-	1.1	1.4	1.5	1.5	1.4	1.5	1.3	-	1.1	1.3	-	1.7	-	1.7	1.6	1.4	-
19	0.3	-	0.2	0.2	-	-	0.3	0.3	0.3	0.3	-	-	-	0.4	0.3	-	0.3	-	-	0.3	0.2	-
20	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
21	1.2	2.2	-	-	-	-	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	0.3	-
22	1.2	2.2	-	-	-	-	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	0.3	-
23	1.2	1.5	1.2	1.1	-	1.1	1.2	1.3	1.4	1.1	1.6	1.1	-	1.0	1.3	-	1.0	-	0.8	1.2	1.3	0.3
24	2.3	-	1.8	-	-	2.1	2.1	2.2	2.2	2.3	-	-	-	2.4	-	-	2.2	-	1.8	2.2	2.4	-
25	1.1	-	1.0	-	-	1.4	1.1	1.2	1.0	1.2	-	-	-	1.1	-	-	1.1	-	1.0	1.0	1.1	-
26	0.2	0.4	0.5	0.8	0.3	0.4	0.3	0.4	0.3	0.3	0.4	0.3	0.1	0.2	0.6	0.4	0.4	0.3	0.3	0.4	0.4	0.3
27	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2
28	1.5	1.8	1.8	1.2	-	1.1	1.4	1.6	1.5	1.2	2.0	1.3	-	1.3	1.5	-	1.4	-	0.9	1.5	1.5	-
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	0.2	0.3	0.3	0.3	0.1	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.4	0.3	0.2	0.3	0.3	0.2	0.2	0.1
34	0.2	0.4	0.3	0.4	-	0.4	0.1	0.3	0.3	-	0.4	0.3	-	-	0.2	0.1	0.4	-	0.4	0.3	0.2	-
35	0.7	0.6	0.6	0.7	-	0.6	0.8	0.7	0.8	0.7	0.9	0.7	-	0.7	0.8	0.5	0.8	-	0.5	0.7	0.8	-
36	0.2	0.3	0.4	0.4	-	0.3	0.4	0.4	0.2	0.3	0.3	0.3	-	0.3	0.2	0.2	0.2	-	0.4	0.2	0.3	-
37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	2.6	1.4	2.1	3.1	-	2.4	3.1	2.5	1.8	2.8	1.2	2.4	-	3.4	2.1	1.3	2.1	0.9	1.9	2.2	2.9	0.2
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	0.3	0.4	0.5	0.2	0.1	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.4	0.4	0.3	0.2	0.4	0.2	0.3	0.1
44	0.3	0.4	0.3	0.4	-	0.3	0.3	0.3	0.2	0.3	0.5	0.3	-	-	0.3	0.3	0.4	0.1	0.4	0.3	0.3	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	1.3	0.8	1.2	1.9	-	1.5	1.9	1.6	1.4	1.5	0.5	1.7	-	1.9	1.3	0.6	1.4	0.3	1.3	1.2	1.8	0.1
47	0.5	0.6	0.7	0.5	0.2	0.4	0.6	0.7	0.6	0.5	0.5	0.4	-	0.4	0.8	0.2	0.3	0.2	0.4	0.8	0.5	0.4
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	0.2	0.2	0.2	-	0.2	0.1	0.3	0.1	0.2	0.2	0.1	-	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
53	0.2	-	0.2	-	-	0.2	-	0.2	0.1	0.1	-	0.2	-	-	0.1	0.1	-	-	0.1	0.1	0.2	0.1
54	-	0.2	0.3	0.3	-	0.2	0.3	0.3	0.2	0.2	0.3	0.3	-	-	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.1
55	0.2	0.1	0.3	-	0.1	0.2	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.3	0.1	0.2	0.1	0.2	0.2	0.2	0.2
56	0.3	0.3	0.6	0.1	0.3	0.2	0.4	0.7	0.3	0.3	0.1	0.3	0.2	0.3	0.9	0.3	0.6	0.3	0.7	0.2	0.5	0.5
57	0.2	0.1	0.2	-	-	0.2	0.1	0.2	0.2	0.1	-	0.1	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
58	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.6	0.2
59	0.2	0.1	0.3	0.2	0.1	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.1	0.2	0.2	0.2	0.2	0.4	0.3
60	0.3	0.2	0.6	1.2	0.2	1.1	0.3	0.5	0.4	0.3	0.2	0.8	0.2	0.2	0.8	0.2	0.5	0.3	0.5	0.2	0.4	0.3
61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.1	0.3	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2
63	0.1	0.1	0.4	0.6	0.1	0.3	0.1	0.1	0.1	0.3	0.1	0.3	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.4	0.1	0.1
64	0.2	-	0.1	0.3	-	0.2	0.2	0.1	0.2	0.3	-	0.2	-	0.3	0.4	-	0.1	-	0.1	0.1	0.2	-
65	0.3	0.1	0.6	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.1	0.2	0.1	0.2	0.4	0.1	0.2	0.1	0.3	0.4	0.3	0.3
66	1.3	0.4	1.4	1.4	0.1	1.2	1.5	1.3	1.4	1.5	0.9	0.8	0.1	1.3	1.5	0.3	1.3	0.3	1.1	1.6	1.6	0.7
67	0.8	0.6	0.7	0.1	0.1	1.0	0.9	0.9	0.9	0.9	-	0.5	-	0.8	-	0.5	0.8	0.4	0.7	1.0	1.1	0.7
68	-	-	-	-	-	-	0.2	0.3	-	0.3	-	-	-	0.2	-	-	-	-	0.3	-	0.3	-
69	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	-	0.1	0.2	0.1	0.2	0.3	0.2	0.2
70	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.3	0.4	-	0.4	0.6	0.4	0.4	0.4	0.4	0.4	0.5	0.4
71	0.6	0.3	0.5	0.7	0.1	0.5	0.5	0.5	0.4	0.5	0.5	0.5	-	0.6	0.5	0.1	0.4	0.1	0.4	0.4	0.6	0.3
72	1.0	0.8	1.0	0.3	-	0.9	0.9	0.9	1.0	0.9	-	0.8	-	0.9	0.5	0.8	0.9	0.8	0.9	0.9	0.9	0.9
73	2.5	1.9	3.0	2.5	-	2.7	3.0	2.8	1.8	3.3	-	1.7	-	2.2	3.3	0.4	1.7	-	3.2	2.8	1.7	-
74	0.4	-	0.4	0.4	-	0.6	0.4	0.3	0.3	0.2	-	0.4	-	0.3	0.2	0.2	0.3	-	0.4	0.4	0.6	-
75	2.2	2.2	1.9	2.3	-	1.5	2.0	2.0	1.5	2.4	-	1.7	-	0.9	2.4	0.4	1.5	-	1.6	1.2	1.5	-
76	2.7	1.7	2.7	2.6	-	2.6	2.7	2.6	1.9	2.9	4.7	2.3	-	2.5	3.2	0.5	2.6	-	3.0	2.0	1.4	-
77	4.0	1.9	3.2	2.6	-	3.0	3.6	3.6	3.2	3.2	4.3	3.2	-	3.9	2.7	-	4.1	-	3.9	3.4	4.5	-
78	0.1	0.1	0.6	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.3	0.1	0.1
79	0.7	0.6	1.0	1.4	0.2	1.0	0.7	1.0	0.9	0.9	0.6	1.2	0.2	0.9	0.9	0.8	0.5	0.4	0.6	0.7	0.8	0.3
80	0.4	0.2	0.3	0.2	0.1	0.4	0.4	0.5	0.4	0.3	0.2	0.2	0.1	0.4	0.4	0.1	0.4	0.1	0.3	0.4	0.5	0.2
81	0.4	0.3	0.9	1.2	0.1	0.9	0.4	0.7	0.7	0.3	0.4	0.9	0.1	0.1	1.0	0.1	0.4	0.1	0.5	0.6	0.2	0.2
82	0.9	0.2	0.5	0.6	0.1	0.7	0.9	0.6	0.7	0.8	0.7	0.4	0.1	0.7	0.5	0.2	0.8	0.2	0.6	0.9	1.0	0.3
83	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.4	0.1	0.2	0.2	0.2	0.2	0.2	0.2
84	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	-	0.1
85	0.3	0.2	0.5	0.7	0.1	0.4	0.2	0.3	0.4	0.4	0.3	0.5	0.1	0.1	0.7	0.1	0.3	0.1	0.2	0.5	0.3	0.1
86	0.8	0.7	0.7	0.7	0.5	0.8	0.7	0.8	0.8	0.9	-	0.7	-	0.6	0.7	0.8	0.8	0.9	0.8	-	0.8	0.7
87	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
88	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	-	0.1	0.2	0.1	0.2	0.1	0.2	0.2
89	1.0	0.3	0.6	0.5	0.1	0.8	0.9	0.7	0.6	0.7	0.2	0.5	0.1	0.3	0.5	0.3	0.8	0.1	0.6	1.0	1.1	0.2
90	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.8	0.1	0.1	0.3	0.1	0.2	0.1	0.1	0.1	-	0.1
91	0.1	0.1	0.3	0.1	0.1	0.2	0.1	0.3	0.3	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1
92	0.4	0.6	0.6	0.5	0.4	0.6	0.3	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.6	0.4
93	0.2	0.2	0.6	0.3	0.2	0.7	0.4	0.7	0.8	0.2	0.1	0.2	0.2	0.2	0.6	0.2	0.6	0.2	0.6	0.4	0.8	0.3
94	0.2	0.2	1.1	0.2	0.2	1.0	0.8	1.1	1.1	0.7	0.2	0.7	0.2	0.7	1.1	0.3	1.0	0.2	0.9	1.3	1.2	0.5
95	0.6	0.8	0.8	0.6	0.6	0.7	0.5	0.6	0.7	0.6	0.7	0.7	0.7	0.6	0.8	0.7	0.7	0.7	0.6	0.6	0.8	0.7
96	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
97	0.5	0.8	0.6	0.5	0.4	0.6	0.3	0.5	0.5	0.5	0.6	0.6	0.4	0.5	0.6	0.5	0.5	0.4	0.6	0.7	0.6	0.5
98	0.6	0.9	0.2	-	-	0.6	0.5	0.7	0.6	0.6	-	-	-	0.6	-	-	0.5	-	0.3	0.5	0.6	-
99	0.3	0.4	0.1	-	-	0.3	0.3	0.4	0.1	0.4	-	-	-	0.4	-	-	0.3	-	0.3	0.3	0.4	-
100	0.8	0.1	0.6	0.6	-	0.7	0.6	0.7	0.8	0.7	-	0.6	0.1	0.7	0.6	0.1	0.6	0.1	0.5	0.8	0.8	0.2
101	0.1	0.8	0.5	0.3	0.1	0.4	0.1	0.1	0.3	0.2	0.1	0.3	0.1	0.1	0.2	0.2	0.4	0.1	0.3	0.4	0.4	0.1
102	0.1	0.1	0.4	0.4	0.1	0.3	0.1	0.1	0.4	0.1	0.1	0.2	0.1	0.1	0.3	0.1	0.3	0.1	0.2	0.6	0.7	0.2
103	0.4	0.1	0.4	0.4	-	0.4	0.3	0.4	0.4	0.4	-	0.3	0.1	0.3	0.4	0.1	0.4	0.1	0.3	0.4	0.5	0.1
104	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
105	0.3	0.2	1.3	0.1	0.1	0.9	0.5	0.7	0.6	0.2	0.1	0.5	0.1	0.1	1.0	0.1	1.1	0.1	1.2	0.6	0.7	1.9
106	0.3	0.1	0.4	0.3	0.1	0.5	0.4	0.4	0.5	0.4	-	0.4	0.1	0.2	0.4	0.1	0.4	0.1	0.3	0.5	0.6	0.1
107	0.1	1.0	1.4	0.1	0.1	0.9	0.3	0.6	0.4	0.3	0.1	0.4	0.1	0.1	0.8	1.9	1.1	0.9	1.9	0.2	0.2	1.1
108	0.1	0.1	0.1	0.1	0.1	0.1	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	0.1	0.1	-	-	0.1
109	0.1	0.1	4.1	0.1	0.1	3.3	0.1	2.4	0.1	0.1	0.1	0.1	0.1	0.1	2.6	0.1	3.4	0.1	3.6	0.1	-	3.5
110	-	0.6	0.4	0.4	-	0.5	0.6	0.7	0.3	-	-	0.6	-	-	0.5	0.4	0.5	-	0.3	0.3	0.5	-
111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
113	0.3	-	0.3	-	-	0.3	0.3	0.3	0.6	-	-	0.3	-	0.6	0.3	-	0.4	-	0.2	0.5	0.5	0.1
114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
115	0.2	0.2	0.4	0.6	-	0.3	0.4	0.3	0.4	0.3	-	0.6	-	0.4	0.5	0.2	0.3	-	0.2	0.3	0.3	-
116	4.9	5.0	3.9	2.8	-	3.3	4.3	3.7	2.5	4.5	5.3	2.4	-	3.8	3.6	0.5	3.7	-	4.1	3.9	4.5	-
117	5.0	-	5.3	5.4	-	5.8	5.5	5.5	5.5	5.1	-	6.0	-	5.8	5.3	-	5.7	-	5.5	5.7	5.6	-
118	4.6	-	-	-	-	-	-	4.8	4.7	-	-	-	-	4.7	-	-	-	-	-	4.8	4.6	-
119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	0.1	0.8	0.4	0.5	0.1	0.5	0.1	0.8	0.4	0.1	0.4	0.1	0.1	0.1	0.7	0.8	0.5	0.1	0.8	0.9	0.3	0.6
121	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	0.1
122	0.4	0.3	0.3	-	-	0.3	0.3	0.3	0.3	0.4	-	-	-	0.3	0.4	-	0.3	-	0.4	0.2	0.3	-
123	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1
124	0.9	-	1.0	1.1	-	1.1	1.1	1.0	1.0	0.9	1.0	1.0	-	1.0	1.0	-	1.0	-	1.1	0.9	1.0	-
125	1.5	-	1.5	1.4	-	1.1	1.3	1.4	1.2	1.3	-	1.1	-	1.3	1.5	-	1.3	-	-	1.4	1.4	-
126	2.7	2.7	2.8	2.9	2.9	2.8	2.5	2.8	2.9	2.8	3.0	2.6	2.8	2.8	2.8	2.7	2.4	2.7	2.1	2.8	3.0	3.0
127	3.1	2.9	3.2	3.2	3.2	3.0	3.0	2.9	3.1	3.0	3.2	3.1	3.2	3.1	3.1	3.2	2.9	3.1	2.8	2.8	3.1	3.2
128	3.0	3.9	3.8	4.2	-	3.7	4.0	3.6	4.2	-	-	3.6	-	-	4.1	4.2	3.9	-	4.1	3.7	3.5	-
129	0.7	0.3	0.9	0.4	-	0.9	0.9	1.0	1.1	0.1	-	0.9	-	0.1	0.7	0.1	0.8	0.1	0.6	1.1	1.1	0.2
130	0.4	-	0.5	0.4	-	0.4	0.4	0.4	0.4	0.4	-	0.3	-	0.5	0.3	-	0.5	-	0.4	0.3	0.4	-
131	0.2	0.4	0.4	0.3	0.1	0.4	0.3	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.4	0.3	0.4	0.2	0.3	0.4	0.5	0.2
132	1.0	2.4	3.1	1.8	3.8	2.6	2.5	2.8	3.1	3.8	3.7	3.1	-	4.5	2.6	3.0	1.9	2.7	1.4	3.5	1.4	3.2

Parcel ID	Change in Depth (Project - Existing) During Dry Days (ft), by WY																						Avg. Dry Day Inundated Area	Avg. Dry Day Depth (ft)	Avg. Change in Depth During Dry Days (ft)	Avg. Dry Day Inundated Area
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018				
0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.5	0.2	0.0	0.5
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.8	0.0	1.0
2	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.2	0.6	0.0	0.2
3	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.2	0.2	0.0	0.2
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.3	0.0	1.4
5	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.7	0.0	3.5
6	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.6	1.9	0.0	0.6
7	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.4
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.4	0.0	1.4
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	1.1	1.1	0.0	1.1
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.2
17	0.0	0.0	-0.1	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.4	0.5	0.0	0.4
18	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.7	1.1	0.0	0.7
19	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	-	-	0.1	-	0.1	0.1	0.0	0.1
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.2
21	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	0.1	0.2	0.0	0.1
22	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	0.1	0.2	0.0	0.1
23	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	1.0	0.9	0.0	1.0
24	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	0.6	1.1	0.0	0.6
25	0.0	-	0.0	-	-	0.0	0.0	0.0	0.1	0.0	-	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	0.2	0.6	0.0	0.2
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.4	0.0	1.5
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.4
28	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	1.1	1.1	0.0	1.1
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.0	0.5
34	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.4	0.2	0.0	0.4
35	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	1.4	0.6	0.0	1.4
36	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	0.0	0.0	0.0	-	0.6	0.2	0.0	0.6
37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.9	0.0	2.4
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.3	0.0	2.3
44	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.4	0.2	0.0	0.4
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.1	0.0	2.4
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.0	0.6
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.2
53	0.0	-	0.0	-	-	0.0	-	0.0	0.0	0.1	-	0.0	-	-	0.0	0.0	-	-	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1
54	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.3
55	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.4
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.0	0.5
57	0.0	0.0	-0.1	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.1	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.2	0.1	0.0	0.2
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.0	0.5
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.8	0.2	0.0	0.8
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.4	0.0	1.6
61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.0	0.6
63	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.2	0.0	0.9
64	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.3	0.1	0.0	0.3
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.2	0.0	0.8
66	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.0	0.0	0.7
67	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.6	0.0	1.8
68	-	-	-	-	-	-	0.0	0.0	-	0.0	-	-	-	0.0	-	-	-	-	0.0	-	0.0	-	0.0	0.1	0.0	0.0
69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.4	0.2	0.0	0.4
70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.0	0.5
71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.4	0.0	1.1
72	0.0	0.0	0.0	0.0	-	0.0	0.0	-0.1	0.0	0.0	-	0.0	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.7	0.0	0.5
73	0.3	0.4	-0.2	0.7	-	-0.7	-0.3	-0.6	0.2	0.0	-	0.2	-	0.0	-0.7	0.8	0.1	-	-0.7	-0.2	0.1	-	1.7	1.8	0.0	3.3
74	-	-	-0.1	-	-	-0.3	-0.2	-0.1	0.1	-	-	0.2	-	-	0.2	0.1	0.0	-	-0.1	-0.2	-0.4	-	0.2	0.2	0.0	0.3
75	1.1	-0.5	0.4	1.0	-	0.6	0.4	0.3	0.7	0.8	-	0.5	-	1.7	-0.3	1.4	0.4	-	0.4	0.9	0.9	-	1.0	1.3	0.5	2.5
76	0.3	0.5	-0.2	0.3	-	-0.6	-0.3	-0.5	0.0	0.3	0.3	-0.2	-	-0.2	-0.8	1.2	-0.4	-	-0.6	0.2	0.3	-	1.3	2.0	0.0	2.7
77	-0.9	-0.4	-0.5	-0.3	-	-0.1	-0.3	-0.7	-0.6	-0.4	-0.1	-1.0	-	-0.7	0.0	-	-0.8	-	-0.5	-0.4	-1.2	-	0.9	2.6	-0.4	1.0
78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.0	0.6
79	0.2	0.0	0.1	-0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.7	0.0	1.6
80	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.3	0.0	1.6
81	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.5	0.0	0.5
82	-0.1	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	0.0	-0.1	0.1	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	1.6	0.5	0.0	1.6
83	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.2	0.0	0.9
84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.5	0.1	0.0	0.5
85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.3	0.0	0.9
86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	1.1	0.6	0.0	1.1
87	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.0	0.6
88	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.3
89	-0.6	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.9	0.5	0.0	1.7
90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-	0.0	0.9	0.2	0.0	0.8
91	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1	0.0	1.0
92	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.5	0.0	4.3
93	0.0	0.0	0.0	-0.1	0.0	0.1	-0.1	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.0	1.3	0.4	0.0	1.3
94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.7	0.0	2.1
95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	4.3	0.7	0.0	4.2
96	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.1	0.0	1.0
97	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.5	0.0	2.3
98	0.1	0.2	0.1	-	-	0.0	0.0	0.0	0.0	0.1	-	-	-	0.1	-	-	0.1	-	0.1	0.1	0.0	-	0.2	0.3	0.0	0.2
99	0.0	-	0.1	-	-	0.1	0.0	-0.1	0.1	-0.1	-	-	-	-0.2	-	-	0.1	-	0.1	0.1	0.0	-	0.1	0.2	0.0	0.1
100	-0.3	0.0	0.0	-0.5	-	0.0	0.0	0.0	0.0	-0.3	-	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.5	-0.1	1.9
101	0.0	0.0	-0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0	-0.3	0.0	0.8	0.2	0.0	0.8
102	0.0	0.0	-0.1	-0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.5	0.0	0.0	0.8	0.2	0.0	0.8
103	-0.2	0.0	0.1	-0.3	-	0.0	0.0	0.0	0.0	-0.1	-	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.3	0.0	1.4
104	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.4	0.1	0.0	0.3
105	-0.2	0.0	0.2	0.0	0.0	0.0	-0.1	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	1.9	0.5	0.0	1.7
106	-0.1	0.0	0.1	-0.2	0.0	0.0	0.0	0.0	0.0	-0.1	-	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.3	0.0	1.7
107	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	1.5	0.6	0.0	1.3
108	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	-	0.0	0.2	0.1	0.0	0.2
109	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	-	0.0	0.4	1.0	0.0	0.3
110	-	-0.1	0.0	0.0	-	0.0	-0.4	-0.3	0.0	-	-	-0.1	-	-	0.0	0.1	0.0	-	0.0	0.1	0.1	-	0.3	0.3	0.0	0.2
111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
113	-	-	0.0	-	-	0.2	-	-0.1	-0.4	-	-	0.0	-	-	-0.1	-	0.1	-	0.1	-0.2	-0.2	0.0	0.1	0.2	0.0	0.1
114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
115	-	0.0	-0.2	-	-	0.0	-0.1	-0.1	-0.1	-	-	-0.4	-	-	-0.1	0.0	-0.1	-	0.0	0.0	0.0	-	0.3	0.3	0.0	0.1
116	0.0	-0.9	-0.3	0.7	-	-0.1	0.1	-0.4	0.6	0.2	0.1	0.4	-	0.3	-0.1	1.3	0.1	-	-0.2	-0.3	-0.4	-	1.4	3.0	0.1	1.6
117	-0.1	-	-0.3	-0.6	-	-0.4	-0.2	-0.4	-0.3	0.0	-	-0.8	-	-0.5	0.0	-	-0.7	-	-0.7	-0.6	-0.5	-	0.8	3.7	-0.3	1.3
118	-	-	-	-	-	-	-	-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	1.2	0.0	0.0
119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.8	0.4	0.0	0.9
121	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.7	0.1	0.0	0.7
122	-0.1	0.1	0.1	-	-	0.2	0.0	0.0	0.0	0.0	-	-	-	-0.1	0.1	-	0.1	-	0.0	0.0	0.1	-	0.2	0.2	0.0	0.1
123	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.2	0.1	0.0	0.0	0.5	0.1	0.1	0.7
124	0.2	-	-0.1	0.1	-	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	-	0.0	0.0	-	0.0	-	0.0	0.0	-0.1	-	0.6	0.7	0.0	0.8
125	0.1	-	0.0	-	-	0.3	-	-0.1	0.0	-	-	0.1	-	0.0	-0.2	-	0.2	-	-	0.1	-0.2	-	0.2	0.8	0.0	0.2
126	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	4.3	2.8	0.0	4.2
127	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	3.1	0.0	1.5
128	-0.3	0.1	0.0	1.3	-	0.1	0.7	0.0	0.1	-	-	0.1	-	-	0.1	-0.5	0.0	-	-0.5	0.3	-0.1	-	0.6	2.5	0.1	0.5
129	-0.4	0.4	-0.1	-0.3	-	0.0	0.0	0.0	0.0	0.0	-	0.1	-	0.0	0.0	0.8	0.0	0.0	0.1	-0.2	0.1	0.0	0.6	0.5	0.0	0.6
130	0.1	-	0.0	0.2	-	-0.1	0.1	-0.1	0.1	0.3	-	0.1	-	-0.1	0.1	-	-0.1	-	0.0	-0.1	-0.1	-	0.4	0.3	0.0	0.3
131	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	1.1	0.3	0.0	1.1
132	-	-0.1	0.2	0.0	0.0	0.1	0.3	-0.4	0.1	0.0	-0.1	0.0	-	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	-0.2	1.0	2.7	0.0	0.9

Waterfowl Season Summary WYs 1997 - 2018

Owner	APN	Parcel ID	Parcel Area	Average Dry Day Inundated Area (%), Existing Conditions by WY																					
				1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
DEPT OF FISH & GAME	24-130-002	133	71	0.2	0.0	0.4	0.0	0.0	0.1	0.1	0.3	0.4	0.0	0.1	0.1	0.0	0.2	0.1	0.0	0.5	0.0	0.0	0.2	0.3	0.0
TJ HOLDINGS LP	24-130-018	134	3	0.9	0.0	1.3	1.1	0.0	1.7	1.2	1.0	1.0	0.9	0.0	0.6	0.0	0.9	0.5	0.0	0.7	0.0	0.4	0.4	0.8	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	24-130-019	135	15	0.0	3.6	1.8	0.1	0.4	2.1	1.2	2.8	3.3	1.0	1.2	0.6	0.0	0.6	1.4	0.9	0.0	0.2	1.1	1.6	0.2	0.9
TJ HOLDINGS LP	24-130-023	136	185	0.5	0.8	1.2	0.5	0.0	1.3	1.0	0.0	0.0	1.1	0.0	2.2	0.3	0.4	1.1	0.6	1.5	0.6	3.0	0.0	0.1	0.7
TJ HOLDINGS LP	24-130-029	137	155	0.3	0.5	1.3	0.3	0.0	1.2	0.7	0.0	0.0	0.8	0.0	2.3	0.2	0.2	1.2	0.3	1.8	0.5	2.1	0.0	0.0	0.5
DE WIT FARMS INC	24-130-030	138	57	0.8	0.7	0.5	0.5	0.1	0.3	0.7	0.1	0.2	0.6	0.0	1.0	0.3	0.4	1.1	0.7	1.0	0.3	1.8	0.0	0.3	0.3
SAC/ SAN JOAQUIN DRAINAGE DIST	24-130-031	139	23	0.0	0.0	4.8	0.0	0.0	4.4	1.3	3.3	3.1	0.1	0.1	2.6	0.0	0.0	2.1	0.0	3.1	0.0	3.5	0.8	0.4	0.6
DEPT OF FISH & GAME	24-180-006	140	12	1.0	0.0	0.7	1.2	0.0	1.7	0.9	0.7	1.0	0.4	0.0	0.5	0.0	0.7	0.5	0.0	0.5	0.0	0.3	0.5	0.6	0.0
DE WIT FARMS LLC	24-180-013	141	3	2.3	0.0	8.8	0.8	0.0	11.2	4.2	9.4	7.2	2.0	0.0	1.5	0.0	1.0	5.8	0.0	9.0	0.0	6.5	2.9	5.1	0.5
SAC/ SAN JOAQUIN DRAINAGE DIST	24-180-014	142	5	0.5	0.0	1.2	0.7	0.0	1.8	0.6	1.0	0.4	0.6	0.0	0.4	0.0	0.4	0.7	0.0	1.1	0.0	0.6	0.9	0.7	0.0
DEPT OF FISH & GAME	25-130-016	143	43	0.0	0.0	0.3	0.0	0.0	0.3	0.1	0.7	0.3	0.0	0.0	0.3	0.0	0.0	0.5	0.0	0.2	0.0	0.3	0.1	0.6	0.0
DNH FARMS GP	25-130-019	144	239	0.5	0.6	1.0	0.6	0.1	1.1	0.9	1.7	1.3	0.9	0.0	1.0	0.3	0.6	1.2	0.5	1.4	0.2	2.5	0.0	0.1	0.7
SUTTER BASIN CORP LTD	25-130-020	145	8	0.0	0.0	0.3	0.0	0.0	0.7	0.2	1.0	0.2	0.3	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.1	0.8	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-029	146	42	0.2	4.4	4.3	1.0	0.7	5.1	1.5	3.9	4.1	0.8	1.2	1.0	0.2	0.5	4.2	1.9	4.5	0.2	8.3	2.2	1.5	1.5
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-030	147	8	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.9	0.0	0.0	0.2	0.0	0.5	0.0	0.2	0.0	0.1	0.0
DNH FARMS GP	25-130-035	148	172	0.3	0.6	1.9	0.2	0.2	2.0	0.6	0.3	0.2	0.5	0.1	1.0	0.2	0.4	2.6	0.3	2.3	0.5	2.6	0.1	0.3	0.5
DNH FARMS GP	25-130-036	149	25	0.1	0.2	0.4	0.1	0.0	0.2	0.4	0.5	0.5	0.4	0.0	0.3	0.1	0.2	0.3	0.1	0.6	0.1	0.8	0.0	0.5	0.2
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-045	150	59	0.1	0.3	5.7	0.1	0.0	4.4	1.8	4.4	3.2	0.1	0.1	3.2	0.1	0.0	2.0	0.1	3.5	0.1	3.5	1.4	1.5	0.4
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-047	151	40	0.4	0.9	0.7	0.5	1.0	1.3	0.3	1.9	1.0	0.2	0.9	0.7	0.2	0.4	0.8	0.7	0.2	0.1	0.5	1.1	1.3	0.8
DE WIT FARMS LLC	25-130-048	152	25	0.2	0.3	0.4	0.3	0.0	0.2	0.5	0.2	0.0	0.7	0.0	1.6	0.2	0.1	0.7	0.1	1.2	0.4	1.4	0.0	0.0	0.3
DE WIT FARMS LLC	25-130-049	153	125	0.3	0.4	0.4	0.3	0.0	0.4	0.6	0.1	0.1	0.6	0.0	1.3	0.2	0.3	0.7	0.3	1.4	0.3	1.2	0.0	0.0	0.4
SUTTER BASIN CORP LTD	25-200-003	154	6	0.0	0.2	1.4	0.2	0.0	1.4	0.3	1.2	0.9	0.0	0.2	1.4	0.0	0.0	0.7	0.0	0.9	0.0	0.6	0.4	0.9	0.0
SUTTER BASIN CORP LTD	25-200-008	155	103	0.0	0.9	1.6	0.2	0.0	1.0	0.4	1.4	0.4	0.0	0.0	0.8	0.0	0.0	1.0	0.1	1.1	0.0	0.3	0.1	0.7	0.0
DNH FARMS GP	25-200-026	156	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DNH FARMS GP	25-200-027	157	15	0.1	0.1	0.7	0.1	0.0	0.9	0.2	0.8	0.9	0.1	0.0	0.2	0.0	0.1	0.7	0.1	0.8	0.1	1.1	0.0	0.2	0.3
DNH FARMS GP	25-200-030	158	127	0.9	1.1	0.8	0.0	0.2	1.1	0.8	0.2	0.3	0.6	0.1	1.4	0.5	0.3	1.4	0.7	0.8	0.3	1.9	0.1	0.2	0.6
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-031	159	54	0.0	1.8	0.7	0.1	0.3	1.6	0.4	2.8	0.8	1.1	0.6	0.3	0.0	0.6	0.8	0.3	0.2	0.0	0.8	1.1	0.3	0.4
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-032	160	42	0.0	1.5	1.8	0.2	0.0	1.4	0.2	1.8	0.7	0.0	0.0	0.7	0.0	0.0	1.2	0.1	1.2	0.0	0.6	0.4	1.2	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-038	161	18	0.0	0.3	1.9	0.1	0.0	1.1	0.5	1.3	0.9	0.1	0.1	1.6	0.1	0.0	0.8	0.1	1.5	0.1	1.2	0.6	0.9	0.2
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-039	162	7	0.1	4.1	3.4	1.0	0.3	4.9	1.3	3.7	4.0	0.8	1.0	0.8	0.0	0.4	4.2	1.7	4.1	0.2	9.3	2.1	0.5	1.2
PERRY FAM REV '03 TR	25-200-042	163	305	0.3	0.3	1.2	0.6	0.1	0.8	0.9	0.2	0.7	0.5	0.0	0.7	0.2	0.3	0.9	0.2	1.9	0.2	1.6	0.0	0.0	0.5
NORDIC INDUSTRIES INC/ ET AL	25-200-043	164	408	0.2	0.3	1.6	0.5	0.0	2.0	0.6	1.5	1.6	0.4	0.0	0.9	0.2	0.2	1.5	0.2	2.2	0.4	3.1	0.0	0.0	0.8
NORDIC INDUSTRIES INC/ ET AL	25-210-007	165	56	0.7	0.0	0.3	0.1	0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.2
SAC/ SAN JOAQUIN DRAINAGE DIST	25-210-009	166	12	1.4	3.2	3.4	1.2	0.1	5.1	1.9	3.9	3.2	1.7	0.4	2.0	0.0	0.9	3.8	0.8	4.9	0.0	4.4	1.6	3.4	0.4
ODYSSEUS FARMS PTN	25-270-007	167	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GARWOOD RANCH INC	25-270-011	168	64	5.1	2.1	1.3	0.4	0.4	0.6	0.7	0.5	0.4	2.4	0.4	0.4	0.4	0.5	0.8	0.4	0.6	0.3	0.4	0.4	3.4	0.4
SAC/ SAN JOAQUIN DRAINAGE DIST	25-270-012	169	11	1.4	1.3	1.9	0.8	0.0	2.1	2.2	2.2	1.6	1.3	0.1	1.1	0.0	0.9	2.0	0.3	2.3	0.0	2.1	1.1	1.5	0.2
DEPT OF FISH & GAME	25-270-013	170	130	2.0	0.5	0.7	0.3	0.0	1.1	1.9	1.1	0.8	2.1	0.0	0.3	0.0	0.9	0.7	0.1	1.1	0.0	0.9	0.4	1.6	0.0
DEPT OF FISH & GAME	25-280-009	171	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEPT OF FISH & GAME	25-290-006	172	307	4.1	2.8	1.9	0.4	0.2	1.4	3.1	1.3	0.8	3.5	0.3	0.4	0.1	1.0	1.0	0.3	1.5	0.1	1.2	0.7	3.3	0.3
ODYSSEUS FARMS PTN	25-290-008	173	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	25-300-002	174	6	2.8	0.8	0.2	0.0	0.0	0.2	0.5	0.2	0.1	1.6	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	2.0	0.0
DEPT OF FISH & GAME	25-300-003	175	115	2.3	1.6	0.2	0.0	0.0	0.1	0.2	0.1	0.0	1.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	1.1	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-003	176	82	0.0	0.1	0.8	0.0	0.0	1.1	0.4	0.8	0.4	0.1	0.0	0.7	0.0	0.2	0.3	0.0	0.6	0.0	0.2	0.3	0.3	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-006	177	17	0.3	0.0	1.0	0.6	0.0	1.9	0.9	1.4	0.7	1.2	0.0	0.6	0.0	0.6	0.7	0.0	1.1	0.0	0.2	0.7	1.9	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-007	178	17	0.1	0.6	0.8	0.3	0.1	0.9	0.2	1.3	0.9	0.4	0.1	0.4	0.0	0.3	0.7	0.1	0.8	0.0	0.6	0.5	1.2	0.1
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-008	179	13	5.0	8.9	8.3	4.9	5.4	9.5	5.5	9.0	7.8	5.1	6.3	7.2	5.1	5.2	8.6	5.9	10.1	4.3	8.9	6.3	7.0	5.9
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-009	180	34	1.5	0.3	1.9	1.4	0.0	2.0	2.5	2.6	1.8	1.7	0.2	1.2	0.0	1.3	2.2	0.0	1.7	0.0	1.2	1.0	1.7	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-010	181	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-012	182	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-014	183	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-017	184	16	6.6	9.6	8.6	6.6	7.6	10.0	5.4	8.4	9.0	7.1	8.2	7.4	6.1	6.6	7.8	8.1	9.0	6.2	10.4	8.3	7.9	8.1
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-020	185	33	2.5	1.7	3.6	1.2	0.1	3.1	4.3	3.0	2.5	2.7	0.5	1.5	0.0	2.0	3.0	0.4	3.8	0.0	3.7	2.0	2.8	0.3
MONTNA A&G PROPERTIES LP	29-210-022	186	461	1.0	0.0	1.0	0.4	0.0	0.4	0.8	0.8	0.4	0.1	0.0	0.5	0.0	0.4	0.1	0.0	0.3	0.0	0.4	0.2	0.5	0.0
NORDIC INDUSTRIES INC/ ET AL	29-210-023	187	164	0.4	0.3	0.2	1.4	0.0	1.1	1.0	0.3	0.9	0.6	0.0	0.2	0.0	0.3	0.3	0.0	0.4	0.0	0.5	0.1	0.9	0.0
NORDIC INDUSTRIES INC/ ET AL	29-210-024	188	344	0.0	0.0	1.7	0.7	0.0	1.8	0.3	1.5	1.2	0.0	0.0	0.2	0.0	0.0	1.0	0.0	1.3	0.1	1.6	0.0	1.4	0.2
SUTTER BASIN CORP LTD	29-230-004	189	44	0.7	1.5	2.3	2.5	0.0	3.4	2.5	2.8	2.6	1.6	0.1	2.1	0.0	1.3	2.1	0.2	2.6	0.0	1.6	1.3	2.7	0.1
SUTTER BASIN CORP LTD	29-230-006	190	53	4.8	8.8	8.7	5.4	5.4	8.5	3.8	8.2	7.8	5.4	5.7	7.0	4.4	5.2	8.2	6.1	8.7	4.3	7.6	4.4	5.7	5.9
GOOSE CLUB FARMS NORTH LLC ET	29-230-007	191	188	0.2	1.4	2.2	0.5	0.3	2.3	0.4	1.7	2.0	0.4	0.4	1.3	0.1	0.3	1.6	0.3	2.2	0.1	2.0	0.5	0.3	0.5
GOOSE CLUB FARMS NORTH LLC ET	29-230-008	192	607	2.9	0.8	4.8	2.3	0.4	3.8	6.4	4.1	3.0	2.8	0.5	2.0	0.4	2.7	3.2	0.4	3.4	0.3	3.2	2.9	3.5	0.4
SAC/ SAN JOAQUIN DRAINAGE DIST	29-230-009	193	1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	29-230-010	194	30	3.3	2.3	0.6	0.1	0.0	0.6	1.2	0.2	0.1	2.5	0.0	0.0	0.0	0.2	0.1	0.0	0.2	0.0	0.2	0.1	2.5	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	195	596	2.2	0.1	2.7	1.7	0.0	2.3	3.7	2.6	2.1	1.8	0.2	1.7	0.0	1.9	2.0	0.0	1.8	0.0	1.2	0.6	2.1	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-230-012	196	48	15.7	14.6	15.0	14.0	13.5	14.1	14.7	14.3	14.0	14.0	13.6	13.8	13.3	13.9	14.5	13.8	14.3	13.3	13.7	13.6	15.3	13.6
SAC/ SAN JOAQUIN DRAINAGE DIST	29-230-013	197	9	0.0	1.3	2.8	0.9	0.0	3.0	1.0	3.4	1.8	0.8	0.2	1.7	0.0	0.6	1.7	0.2	2.0	0.0	1.6	0.8	2.4	0.1
MONTNA A&G PROPERTIES LP	29-230-014	198	33	1.3	0.2	2.0	2.5	0.0	2.9	2.9	2.0	2.3	1.6	0.0	1.6	0.0	1.3	1.1	0.0	1.5	0.0	1.2	1.4	2.3	0.0
SUTTER BASIN CORP LTD	29-250-001	199	53	5.0	5.6	10.7	6.0	6.5	6.7	2.5	4.6	7.2	5.8	8.6	6.3	4.8	5.8	7.2	6.4	4.8	4.0	2.8	3.5	6.7	9.3
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	200	643	0.2	2.7	3.0	0.3	0.1	3.4	1.1	3.5	2.3	0.3	0.3	2.0	0.0	0.2	2.8	0.6	3.5	0.0	2.3	1.1	1.7	0.2
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	201	2	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	202	260	4.1	1.5	0.7	0.0	0.0	0.8	1.8	0.2	0.0	3.1	0.0	0.0	0.0	0.3	0.1	0.0	0.5	0.0	0.0	0.0	3.2	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	203	21	9.5	5.7	5.1	1.8	1.1	2.2	4.3	2.7	1.9	6.4	1.3	1.5	0.3	2.0	3.5	1.4	3.0	0.3	1.3	1.2	7.7	1.1
SUTTER BASIN CORP LTD	29-250-004	204	13	0.7	5.2	2.3	1.3	1.4	5.4	1.0	3.6	3.8	1.3	2.7	1.2	0.4	0.4	4.0	1.8	4.9	0.2	6.9	2.2	1.1	2.4
SUTTER BASIN CORP LTD	29-250-005	205	38	1.0	4.4	2.5	1.6	1.7	3.9	1.1	4.1	4.0	1.4	2.8	1.2	0.6	1.1	2.5	1.8	2.5	0.3	3.5	2.8	1.4	2.5
GOOSE CLUB FARMS NORTH LLC ET	29-250-006	206	306	0.1	3.3	0.8	0.1	0.7	2.1	0.5	2.1	2.6	0.8	1.8	0.6	0.1	0.1	1.2	1.0	0.4	0.0	0.8	1.4	0.3	1.1
GOOSE CLUB FARMS NORTH LLC ET	29-250-007	207	215	0.0	0.0	0.8	0.0	0.0	1.3	0.3	1.1	0.4	0.0	0.0	0.2	0.0	0.4	0.4	0.0	0.4	0.0	0.2	0.4	1.1	0.0
GOOSE CLUB FARMS NORTH LLC ET	29-250-008	208	8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29-260-013	209	16	8.1	7.1	6.1	5.9	5.9	6.0	6.0	5.9	5.9	7.0	5.9	5.9	5.9	5.9	6.0	5.9	6.0	5.9	5.9	5.9	7.7	5.9
	29-260-014	210	19	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	211	491	0.4	6.5	2.6	0.5	0.2	3.8	0.7	2.9	2.2	0.5	1.1	1.2	0.0	0.3	3.6	1.3	5.3	0.0	5.7	1.4	0.8	0.8
GOOSE CLUB FARMS NORTH LLC ET	34-100-007	212	223	1.8	1.2	8.7	3.5	4.5	2.9	0.4	1.6	5.0	4.0	4.4	2.4	3.0	2.4	4.1	1.0	2.0	0.6	0.5	3.1	5.8	3.6
GOOSE CLUB FARMS NORTH LLC ET	34-110-025	213	173	9.4	8.9	12.9	9.7	9.8	8.5	6.1	7.2	10.6	9.6	9.9	8.9	8.5	9.5	9.6	9.2	9.0	8.4	6.2	5.7	8.8	9.7
GENERATIONS FARMLAND LLC	34-110-026	214	22	20.3	17.0	23.3	11.8	17.9	8.7	9.0	4.0	20.5	15.9	14.3	16.9	15.0	19.0	22.0	13.4	16.7	13.1	11.2	6.3	13.9	22.0
GOOSE CLUB FARMS NORTH LLC	34-120-016	215	351	0.7	2.9	1.0	0.6	1.3	2.8	0.7	2.9	2.8	1.1	1.4	0.5	0.3	0.5	1.3	0.9	0.1	0.1	0.9	1.8	1.0	1.1
GENERATIONS FARMLAND LLC	34-120-017	216	180	0.0	4.2	2.2	0.6	0.0	4.3	0.9	3.2	3.1	0.0	1.9	1.8	0.0	0.0	4.3	1.8	5.5	0.0	9.3	2.3	0.0	2.0
GENERATIONS FARMLAND LLC	34-150-001	217	733	4.3	7.0	7.4	5.2	5.3	7.3	2.4	6.0	7.3	5.0	6.3	5.0	3.9	4.8	7.6	5.6	6.6	3.4	8.9	3.9	4.4	6.6
GALLOWAY CHRISTOPHER J	34-170-020	218	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GALLOWAY CHRISTOPHER J	34-170-021	219	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENERATIONS FARMLAND LLC	34-170-022	220	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENERATIONS FARMLAND LLC	34-180-001	221	456	2.0	5.2	3.3	1.9	1.9	4.1	2.2	3.1	3.1	2.2	2.3	2.5	1.7	1.9	3.7	2.4	4.8	1.6	4.3	2.4	2.8	2.2
GENERATIONS FARMLAND LLC	34-180-003	222	159	0.0	0.0	0.7	0.0	0.0	1.0	0.4	0.9	0.2	0.0	0.0	0.3	0.0	0.5	0.4	0.0	0.3	0.0	0.4	0.4	1.5	0.1
GENERATIONS FARMLAND LLC	34-180-004	223	17	4.0	5.2	6.0	3.9	4.2	5.6	3.8	5.2	4.9	4.1	4.3	4.5	3.7	4.1	5.2	4.6	5.1	3.4	4.9	3.6	5.0	4.7
R & J FARMS INC	34-210-004	224	83	0.0	0.0	0.6	0.0	0.0	0.2	0.7	0.3	0.1	0.1	0.0	0.0	0.0	0.2	0.4	0.0	0.4	0.0	0.0	0.3	0.1	0.0
DEFTY FAM '05 TR ET AL	34-210-006	225	91	0.0	0.0	1.4	0.9	0.0	0.5	1.8	0.9	1.0	0.6	0.0	1.1	0.0	1.1	0.6	0.0	1.1	0.0	0.5	0.8	0.7	0.1
SAC/ SAN JOAQUIN DRAINAGE DIST	34-210-007	226	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-210-008	227	4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.4	0.0	0.1	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	34-210-009	228	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-210-010	229	70	0.0	0.1	1.1	0.4	0.0	0.3	1.5	1.1	0.5	0.7	0.0	0.5	0.0	0.9	0.5	0.0	1.0	0.0	0.5	0.5	0.7	0.1
PETERS LAURA H	34-210-011	230	64	0.5	0.6	1.6	0.8	0.4	0.8	1.4	1.5	0.9	1.1	0.4	0.8	0.1	0.8	0.9	0.4	1.3	0.0	0.6	0.5	1.3	0.4
PETERS LAURA H	34-210-012	231	487	1.0	1.2	3.5	1.2	1.0	3.3	2.0	3.3	2.2	1.3	1.1	1.7	1.0	1.4	2.1	1.1	2.9	1.0	2.2	1.8	2.7	1.4
GIUSTI RICHARD/ SANDRA TR ET AL	34-220-015	232	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WHITE RALPH/ MILDRED RED '91 TR	34-220-016	233	19	5.5	2.8	1.3	0.0	0.0	0.6	1.3	0.4	0.2	3.7	0.0	0.0	0.0	0.5	0.9	0.0	0.8	0.0	0.4	0.2	3.7	0.0
FAIRLEE TR	34-220-018	234	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GIUSTI RICHARD/ SANDRA FAM TR	34-220-020	235	13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-024	236	2	25.0	25.0	-	25.0	25.0	25.0	25.0	25.0	25.0	-	-	25.0	25.0	25.0	-	-	25.0	25.0	25.0	25.0	25.0	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-029	237	3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-030	238	23	0.6	0.0	1.4	0.1	0.0	0.5	2.8	1.2	0.6	1.0	0.0	0.0	0.0	0.4	0.4	0.0	0.9	0.0	0.5	0.7	0.9	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-031	239	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	34-220-032	240	22	17.6	17.6	17.8	18.2	17.5	17.9	18.0	17.8	18.0	17.7	17.6	17.7	17.5	17.8	17.8	17.5	17.9	17.5	17.8	17.7	18.0	17.5
SAC/ SAN JOAQUIN DRAINAGE DIST	34-230-011	241	2	4.7	1.3	2.8	0.0	0.0	1.1	3.4	0.7	0.5	3.8	0.0	0.0	0.0	1.0	2.1	0.0	1.4	0.0	1.2	0.6	2.6	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	34-230-012	242	31	0.0	0.0	2.4	0.0	0.0	0.6	2.3	0.7	0.7	0.3	0.0	0.8	0.0	0.6	0.9	0.0	1.3	0.0	1.1	1.1	1.5	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	34-230-013	243	7	0.8	0.1	1.2	0.0	0.0	0.0	0.8	0.1	0.2	0.4	0.0	0.0	0.0	0.2	0.5	0.0	0.6	0.0	0.5	0.2	0.4	0.0
DEPT OF WATER RESOURCES	34-230-014	244	4	2.4	0.9	0.2	0.0	0.0	0.7	1.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.6	0.0
	34-240-013	245	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34-240-014	246	33	0.8	4.6	4.3	1.0	1.5	4.3	1.1	3.7	3.1	1.2	2.2	2.3	0.4	0.7	3.6	1.5	4.3	0.1	4.5	1.9	2.5	2.1
SUTTER MUTUAL WATER CO	34-240-021	247	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUTTER BASIN CORP LTD	34-240-024	248	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	56 DEEDS 71	249	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	5.5	-	-
	56 DEEDS 71	250	113	3.7	9.8	8.2	4.6	4.2	9.5	5.1	8.4	7.5	4.3	5.0	4.9	3.6	4.1	9.0	5.3	9.7	3.7	10.4	5.6	5.9	4.8
	56 DEEDS 71	251	26	1.0	0.0	0.4	0.5	0.0	1.3	0.6	0.8	0.4	0.9	0.2	0.3	0.0	0.3	0.6	0.0	0.7	0.0	0.6	0.4	0.8	0.0
	56 DEEDS 79	252	30	0.1	0.0	2.1	0.1	0.0	1.5	1.1	1.9	1.8	0.1	0.0	1.7	0.0	0.1	0.8	0.1	1.7	0.1	1.2	0.8	0.9	0.5
	56 DEEDS 79	253	35	0.0	3.2	1.6	0.1	0.3	1.2	0.7	2.3	1.7	1.2	0.9	0.6	0.0	0.6	1.1	0.5	0.8	0.2	1.5	1.0	0.3	0.6
	61 DEEDS 128	254	57	2.2	0.2	6.6	0.9	0.0	6.2	3.3	6.0	4.0	1.6	0.0	3.3	0.1	0.8	3.1	0.2	5.1	0.1	4.7	2.2	3.7	0.5
	61 DEEDS 133	255	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	61 DEEDS 135	256	39	0.3	0.3	5.7	2.1	0.1	7.4	2.0	5.1	2.1	0.7	0.4	1.0	0.1	0.5	3.2	0.3	4.2	0.2	4.9	0.5	1.5	0.6
	61 DEEDS 199	257	75	0.6	0.0	1.4	1.3	0.0	2.2	1.3	1.4	1.4	1.1	0.0	0.7	0.0	0.8	0.6	0.0	0.9	0.0	0.5	0.4	0.9	0.0
	61 DEEDS 200	258	27	1.0	0.0	1.6	0.7	0.0	1.9	1.6	1.8	1.4	1.0	0.0	1.0	0.0	0.9	0.8	0.0	1.5	0.0	1.1	0.9	1.6	0.1
	61 DEEDS 461	259	17	0.5	0.0	0.3	0.0	0.0	0.4	0.5	0.4	0.3	0.4	0.0	0.1	0.0	0.1	0.2	0.0	0.1	0.0	0.0	0.3	0.5	0.0
	61 DEEDS 466	260	29	0.4	0.2	0.2	0.4	0.0	0.5	0.9	0.8	0.4	0.5	0.1	0.4	0.0	0.5	1.0	0.0	0.4	0.0	0.2	0.3	0.3	0.0
	61 DEEDS 95	261	28	0.2	0.0	0.6	0.0	0.0	0.1	1.0	0.3	0.2	0.7	0.0	0.0	0.0	0.5	0.1	0.0	0.4	0.0	0.8	0.2	0.8	0.0
	63 DEEDS 266	262	27	1.0	0.2	0.7	1.4	0.0	1.0	1.6	1.2	1.1	0.8	0.2	0.9	0.0	1.0	1.5	0.0	0.6	0.0	0.2	0.4	0.8	0.0
	63 DEEDS 268	263	27	0.7	0.1	0.5	0.4	0.0	0.5	1.7	0.9	0.6	0.6	0.1	0.7	0.0	0.5	1.1	0.0	0.6	0.0	0.3	0.4	1.3	0.0
	65 DEEDS 221	264	42	27.5	27.3	27.8	27.4	27.5	27.3	27.0	27.3	27.4	27.4	27.4	27.4	27.4	27.3	27.1	27.6	27.4	27.6	26.4	26.7	27.1	27.8
	65 DEEDS 319	265	145	1.3	7.7	6.2	1.6	1.3	7.8	2.1	6.9	5.3	1.2	2.1	3.6	0.5	1.0	6.9	2.3	7.6	0.3	7.4	2.9	4.0	2.2
	71 DEEDS 387	266	36	0.9	0.0	0.3	0.4	0.0	0.8	1.7	0.9	0.9	0.6	0.1	0.5	0.0	0.4	0.9	0.0	0.5	0.0	0.4	0.5	1.0	0.0

Parcel ID	Average Dry Day Depth (ft), Existing Conditions by WY																					
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
133	0.7	-	0.6	0.4	-	0.7	0.6	0.6	0.6	-	0.5	0.8	-	0.5	0.7	-	0.6	-	1.3	0.6	0.6	-
134	0.9	-	0.8	1.2	-	0.9	1.0	0.8	1.1	0.8	-	1.0	-	1.0	1.0	-	0.8	-	0.9	0.9	0.9	-
135	0.3	0.6	0.6	0.3	0.4	0.5	0.6	0.5	0.6	0.5	0.5	0.4	0.2	0.5	0.6	0.5	-	0.5	0.6	0.5	0.3	0.5
136	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	-	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2
137	0.2	0.2	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.3	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	0.2
138	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.2
139	0.2	0.3	0.4	0.2	-	0.5	0.5	0.5	0.6	0.2	0.4	0.5	0.2	0.2	0.4	0.2	0.4	0.2	0.3	0.6	0.7	0.3
140	0.5	-	0.4	0.7	-	0.5	0.5	0.6	0.7	0.7	-	0.6	-	0.7	0.6	-	0.5	-	0.4	0.6	0.6	-
141	1.6	-	0.9	1.4	-	1.0	1.2	1.0	1.0	1.4	-	1.1	-	1.3	0.8	-	0.8	-	0.7	1.2	1.1	0.2
142	0.5	-	0.5	0.5	-	0.6	0.6	0.6	0.7	0.7	-	0.6	-	0.6	0.5	-	0.5	-	0.5	0.5	0.5	-
143	-	-	0.6	-	-	0.9	0.5	0.5	0.6	-	1.1	0.8	-	-	0.7	-	0.8	-	0.8	0.8	0.8	-
144	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
145	-	-	1.1	-	-	1.0	1.2	1.0	1.0	1.0	-	-	-	-	1.0	-	-	-	1.0	1.2	1.0	-
146	0.4	1.0	0.9	1.0	0.6	1.0	0.9	1.1	1.0	0.7	0.7	0.7	0.5	1.0	1.0	0.9	1.0	0.7	1.0	0.9	0.6	0.6
147	-	-	0.6	-	-	-	-	0.7	0.7	-	0.5	0.5	-	-	0.5	-	0.5	-	0.6	0.6	0.7	-
148	0.1	0.1	0.2	0.2	0.1	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1
149	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
150	0.7	0.8	0.9	0.6	-	0.9	0.8	1.0	1.0	0.7	1.5	0.9	0.7	0.5	0.7	0.7	0.8	0.7	0.8	1.1	1.0	0.6
151	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.5	0.6	0.6
152	0.1	0.1	0.1	0.2	-	0.2	0.1	0.2	-	0.1	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	-	0.2
153	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
154	-	0.2	0.7	0.2	-	0.8	1.1	0.5	0.6	-	0.8	0.6	-	-	0.3	-	0.6	-	0.9	0.8	1.1	-
155	-	0.8	0.9	1.1	-	0.9	0.9	0.9	0.9	-	-	0.9	-	-	0.8	0.8	0.9	-	0.9	1.0	0.8	-
156	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
157	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.3	-	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
158	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
159	0.7	0.5	0.4	0.5	0.7	0.5	0.4	0.6	0.4	0.4	0.5	0.3	0.7	0.5	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.5
160	-	0.6	0.6	1.0	-	0.7	0.5	0.7	0.5	-	-	0.5	-	-	0.8	0.7	0.6	-	0.5	0.6	0.8	0.3
161	0.1	0.2	0.5	0.2	-	0.6	0.5	0.6	0.5	0.3	1.0	0.4	0.2	0.2	0.5	0.2	0.6	0.2	0.4	0.7	0.7	0.3
162	0.7	0.9	1.0	1.0	0.8	1.0	0.9	0.9	1.0	0.8	0.8	0.8	0.7	0.8	1.0	1.0	1.1	0.8	1.1	0.9	0.9	0.9
163	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2
164	0.2	0.2	0.3	0.2	0.1	0.3	0.1	0.3	0.3	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.3	0.1	0.1	0.2
165	0.4	0.1	0.2	0.1	-	0.1	-	0.2	0.1	0.1	-	0.1	0.1	0.1	-	-	0.1	0.1	0.1	0.1	0.1	0.1
166	1.2	0.9	0.8	0.9	0.9	0.9	1.0	1.0	0.9	1.2	0.8	1.0	-	1.1	0.8	0.7	0.9	0.6	0.8	0.9	1.0	0.7
167	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
168	3.8	2.9	4.0	2.4	1.4	2.1	3.5	2.9	2.5	5.8	2.0	2.0	0.6	1.9	3.2	2.0	2.9	0.6	1.5	1.4	3.6	1.8
169	3.9	2.4	3.2	3.4	-	2.9	3.9	3.1	2.9	3.7	2.2	3.0	-	4.0	2.9	2.1	3.0	-	2.8	3.3	3.4	1.8
170	3.5	1.8	2.8	2.9	-	2.5	3.9	2.9	2.4	3.4	1.8	2.7	-	3.8	2.6	1.4	2.7	-	2.4	3.3	3.0	1.3
171	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
172	3.0	2.8	2.9	2.9	2.4	2.6	2.7	2.6	2.6	2.3	2.5	2.5	3.0	2.3	2.6	2.4	2.5	3.0	2.8	2.9	3.0	2.3
173	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
174	3.7	5.1	5.1	-	-	5.8	5.0	4.2	4.2	4.5	-	-	-	4.0	0.1	-	3.6	-	4.4	-	3.7	-
175	4.2	4.2	3.5	2.4	-	3.2	2.6	2.0	2.4	3.9	2.5	0.4	-	3.3	4.3	-	4.2	-	2.8	2.3	4.0	-
176	-	0.5	0.7	0.9	-	0.7	0.8	0.7	0.7	1.0	1.0	0.8	-	1.0	0.6	-	0.6	-	0.8	0.6	0.7	-
177	1.5	-	0.8	1.2	-	0.9	1.2	0.8	0.7	1.3	-	1.1	-	1.2	1.0	-	1.0	-	0.9	1.0	1.0	-
178	4.6	5.2	4.2	4.5	4.4	4.7	4.7	4.2	4.4	3.8	4.8	4.3	4.1	3.6	4.8	5.4	4.9	4.5	5.0	4.5	3.6	5.1
179	1.2	1.3	1.2	1.0	1.1	1.3	1.1	1.2	1.2	1.1	1.2	1.2	1.3	1.2	1.3	1.2	1.5	1.0	1.4	1.2	1.1	1.2
180	1.9	2.1	1.6	2.1	-	1.7	1.9	1.6	1.6	2.0	1.6	1.9	-	2.0	1.9	1.7	1.9	1.3	1.6	1.6	1.6	1.5
181	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
182	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
183	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
184	5.1	5.4	5.9	5.3	5.5	5.3	4.6	5.3	5.6	5.3	5.6	5.3	5.1	5.3	5.5	5.4	5.2	5.0	5.4	4.9	5.3	5.6
185	6.6	5.2	5.8	6.5	3.8	5.9	6.5	5.9	5.6	5.6	4.6	5.8	-	6.3	5.9	4.7	5.9	4.8	5.6	5.2	6.0	4.5
186	1.0	1.3	0.7	0.9	-	0.7	0.8	0.7	0.8	0.7	-	0.8	-	0.8	0.7	-	0.6	0.1	0.5	0.6	0.6	0.2
187	0.4	0.4	0.2	0.4	-	0.3	0.3	0.2	0.3	0.3	-	0.2	0.1	0.2	0.2	-	0.3	0.1	0.2	0.2	0.2	-
188	-	0.1	0.3	0.4	-	0.5	0.3	0.3	0.3	0.1	-	0.2	0.1	-	0.3	0.1	0.3	0.1	0.3	-	0.4	0.3
189	2.2	1.5	2.8	2.7	0.3	2.3	2.5	2.6	2.2	2.9	0.9	3.0	-	3.3	2.0	0.9	1.9	0.1	1.2	2.0	3.2	0.5
190	1.7	2.4	2.6	1.8	1.9	2.3	1.3	2.1	2.3	1.9	2.1	2.1	1.6	1.8	2.4	2.0	2.3	1.5	2.1	1.5	1.8	2.1
191	1.4	1.9	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.4	1.4	1.2	1.4	1.3	1.5	1.5	1.5	1.3	1.7	1.7	1.5	1.5
192	3.6	3.8	4.1	3.5	3.1	2.6	3.1	3.2	3.1	2.0	3.5	3.3	2.4	2.8	3.9	3.6	3.5	2.5	2.6	2.5	3.3	3.4
193	-	-	0.1	-	-	-	-	0.3	0.1	-	-	-	-	-	-	-	0.2	-	-	0.2	-	-
194	3.9	2.5	4.1	1.3	-	2.2	2.6	2.0	2.3	3.7	3.5	0.8	-	3.1	5.2	-	4.0	-	3.2	2.8	3.4	-
195	2.2	6.0	3.0	2.7	4.7	3.4	2.2	3.2	3.6	3.0	5.1	4.0	-	3.0	4.4	6.1	4.2	6.1	4.4	3.3	2.3	5.6
196	18.3	15.7	17.1	14.5	13.4	14.4	16.0	15.1	14.5	16.2	14.1	14.1	12.8	14.1	15.7	13.8	15.3	12.8	13.6	13.6	17.4	13.8
197	5.8	5.9	6.5	6.0	-	6.1	6.4	6.3	6.1	6.5	5.2	6.8	-	6.6	6.1	5.4	6.1	-	5.3	5.9	6.2	5.4
198	1.4	1.2	1.2	1.0	-	0.8	1.2	1.3	1.3	0.7	-	1.5	-	0.9	0.8	-	0.9	-	1.2	1.0	1.0	-
199	1.3	1.3	1.3	1.3	1.4	1.3	1.0	1.1	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.4	1.3	1.3	1.0	1.1	1.3	1.4
200	0.9	1.5	1.2	1.2	1.1	1.3	1.1	1.5	1.2	1.1	1.1	1.5	0.9	1.1	1.3	1.2	1.3	1.2	1.5	1.2	1.2	1.1
201	1.0	0.3	-	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	1.0	-
202	1.7	1.7	1.9	-	-	1.6	1.4	1.7	1.7	1.6	-	-	-	1.8	2.2	-	1.8	-	1.6	0.8	1.5	-
203	4.2	2.9	3.2	1.8	0.7	2.2	2.4	2.1	1.8	6.2	1.4	1.5	0.3	1.3	2.3	1.0	2.1	0.5	3.1	2.1	3.7	1.3
204	0.7	1.5	0.8	0.8	0.8	1.3	1.5	1.4	1.0	0.6	0.7	0.9	0.7	0.9	1.2	1.1	1.6	0.7	1.6	1.2	0.9	0.8
205	1.5	1.3	1.6	1.5	1.6	1.5	1.3	1.3	1.5	1.5	1.6	1.7	1.5	1.4	1.4	1.4	1.5	1.4	1.3	1.3	1.6	1.5
206	0.7	0.4	0.3	0.7	0.5	0.5	0.3	0.6	0.4	0.3	0.3	0.2	0.4	0.7	0.4	0.5	0.2	0.5	0.3	0.5	0.5	0.4
207	-	0.3	1.0	0.9	-	0.4	0.4	0.4	0.3	0.3	1.1	0.4	-	0.6	0.6	-	0.4	-	0.3	0.4	1.0	-
208	0.5	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-
209	18.2	16.7	18.7	15.9	14.4	15.7	17.8	16.7	15.9	16.1	15.2	15.4	13.6	15.3	17.1	15.1	16.6	13.6	14.7	14.7	18.0	14.9
210	0.5	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	0.1	-
211	0.7	0.8	1.0	0.6	0.6	0.6	0.8	0.7	0.5	0.8	0.4	0.5	0.2	0.4	0.9	1.5	1.0	1.6	0.8	0.8	0.5	0.8
212	1.0	1.1	0.6	0.9	1.0	1.0	1.0	1.1	0.9	0.9	1.1	1.0	1.0	0.9	0.8	1.0	0.9	1.0	1.0	1.1	1.2	1.0
213	1.2	1.2	1.3	1.2	1.2	1.1	0.7	0.9	1.2	1.2	1.1	1.2	1.1	1.3	1.3	1.3	1.1	1.1	0.9	0.7	1.0	1.3
214	0.4	0.4	0.5	0.3	0.4	0.3	0.3	0.3	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.3	0.4	0.3	0.4	0.2	0.3	0.5
215	1.0	0.6	0.4	0.5	0.4	0.5	0.4	0.6	0.6	0.5	0.5	0.3	0.3	0.4	0.5	0.6	1.0	1.0	0.5	0.5	0.3	0.3
216	-	0.5	0.4	1.0	-	0.7	0.5	0.7	0.6	-	0.4	0.5	0.1	0.2	0.7	0.5	0.8	-	1.0	0.7	-	0.4
217	0.8	1.0	1.0	0.8	0.9	1.0	0.6	0.9	1.0	0.8	0.9	0.8	0.7	0.8	1.0	0.9	0.9	0.7	1.0	0.8	0.8	1.0
218	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
219	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
221	5.3	4.4	5.5	5.3	5.3	4.6	4.6	4.7	5.0	5.3	5.2	5.1	5.3	5.4	5.0	5.2	4.6	5.3	4.2	4.6	4.9	5.2
222	1.5	0.6	1.2	0.8	0.6	0.6	0.4	0.8	0.7	1.6	3.1	0.7	0.2	0.8	1.1	1.0	0.8	-	0.5	0.6	0.8	0.2
223	3.9	4.2	4.7	3.8	4.1	4.1	3.5	4.2	4.3	3.7	3.9	4.3	4.0	4.3	4.4	3.9	4.3	3.6	3.6	3.8	3.8	3.8
224	-	0.5	0.5	0.6	-	0.6	0.5	0.4	0.6	0.4	-	0.3	-	0.5	0.5	-	0.3	-	0.5	0.5	0.4	-
225	-	0.1	0.2	0.3	-	0.2	0.2	0.3	0.2	0.2	-	0.3	0.1	0.2	0.2	-	0.2	-	0.2	0.2	0.2	0.2
226	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
227	-	-	-	-	-	-	0.1	-	-	-	-	-	-	0.2	0.1	-	0.2	-	0.2	-	-	-
228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
229	3.6	2.1	2.8	4.4	2.0	3.1	1.9	2.7	2.9	2.8	3.5	2.8	-	2.1	2.3	2.6	1.5	1.5	2.8	2.8	2.7	0.8
230	1.9	3.3	4.4	3.5	1.3	4.4	2.9	3.6	2.9	2.3	2.0	2.4	1.0	2.8	3.2	2.0	3.2	2.2	3.9	4.6	3.1	1.8
231	6.2	7.0	6.0	6.2	6.4	5.7	5.0	5.4	6.0	6.2	6.5	6.2	5.9	6.0	6.4	6.5	5.9	5.7	5.6	5.5	5.8	6.3
232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
233	6.9	6.8	7.4	-	-	7.5	8.0	6.8	7.2	7.1	-	-	-	6.7	7.2	-	6.7	-	8.3	8.3	6.7	-
234	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	0.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.2
236	4.8	4.6	-	4.8	4.8	4.2	4.8	4.9	4.7	-	-	4.8	4.3	4.5	-	-	4.6	4.1	4.4	4.3	4.8	-
237	-	-	-	-	-	-	0.2	0.3	0.3	0.3	-	0.3	-	-	-	-	-	-	0.3	-	0.3	-
238	1.5	-	0.9	1.0	-	1.0	1.3	0.9	1.0	1.0	-	0.7	-	0.8	0.7	-	1.0	-	0.8	0.7	0.9	-
239	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240	14.7	15.9	17.9	15.5	14.8	16.4	14.6	16.7	15.6	15.1	15.3	15.2	12.9	13.5	16.4	15.4	15.9	12.5	13.9	14.3	15.9	15.1
241	3.1	3.2	1.9	-	-	3.1	2.0	2.4	1.2	3.0	-	-	-	2.2	1.8	-	2.6	-	1.2	0.8	3.2	-
242	-	-	1.0	-	-	1.0	1.2	1.1	0.9	1.4	-	1.0	-	1.0	0.9	-	0.9	-	1.0	1.0	1.1	-
243	4.2	3.7	3.8	-	-	5.0	4.1	4.8	3.4	4.2	-	-	-	4.3	4.4	-	3.0	-	4.2	4.1	3.9	-
244	1.1	1.0	0.9	-	-	1.1	1.1	1.4	-	1.2	-	-	-	1.5	-	-	1.2	-	-	-	1.2	-
245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
246	0.7	1.8	0.9	0.6	0.6	1.4	1.6	1.6	1.1	0.7	0.7	1.1	0.5	0.5	1.3	1.2	1.9	0.6	1.8	1.4	0.9	0.8
247	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
248	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	0.6	-	-
250	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.8	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
251	1.2	-	1.1	1.0	-	1.1	1.2	1.1	1.3	1.3	1.0	0.8	-	1.1	1.0	-	1.1	-	1.1	1.1	1.0	-
252	0.3	0.3	0.4	0.3	-	0.3	0.3	0.3	0.4	0.4	-	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3
253	0.5	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.6	0.6	0.6	0.4	0.6	0.7	0.6	0.6	0.5	0.7	0.6	0.5	0.5
254	0.8	0.3	1.0	0.7	0.1	0.9	0.8	0.9	0.9	0.7	0.1	0.8	0.2	0.6	0.9	0.3	0.9	0.3	0.8	1.0	1.0	0.4
255	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256	0.1	0.2	0.7	0.4	0.1	0.7	0.5	0.6	0.7	0.2	0.5	0.3	0.1	0.4	0.7	0.2	0.8	0.2	0.8	0.9	1.0	0.3
257	0.5	-	0.8	0.9	-	0.8	0.9	0.8	1.0	0.7	0.9	0.8	-	0.9	0.8	-	0.8	-	0.7	0.6	0.6	-
258	0.2	0.1	0.2	0.4	-	0.3	0.3	0.2	0.3	0.2	-	0.2	0.1	0.3	0.3	0.1	0.2	0.1	0.3	0.2	0.2	0.2
259	0.9	-	0.8	-	-	1.3	1.2	0.7	0.9	0.5	-	1.1	-	1.2	0.7	-	1.3	-	-	1.1	0.9	-
260	1.2	0.8	1.2	1.2	-	1.2	1.0	1.0	1.1	1.0	0.9	1.3	-	1.1	1.1	-	0.9	-	1.1	1.2	1.3	-
261	0.8	-	0.6	-	-	0.9	0.7	0.9	0.5	0.7	-	-	-	1.0	0.3	-	0.7	-	0.8	0.5	0.5	-
262	1.3	1.6	0.8	1.2	-	1.1	1.0	1.1	1.3	0.9	1.6	1.3	-	1.2	1.3	-	1.1	-	0.9	1.0	0.9	-
263	0.9	0.7	0.9	1.3	-	1.1	1.0	0.9	1.2	0.9	1.1	1.0	-	1.1	1.1	0.1	0.7	-	0.8	1.3	1.0	0.4
264	0.9	1.0	1.0	1.0	1.0	1.0	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.0	0.9	0.9	0.9	1.0
265	0.5	1.3	0.9	0.6	0.5	1.2	1.2	1.2	0.9	0.6	0.6	0.9	0.4	0.5	1.0	0.7	1.4	0.5	1.6	1.0	0.9	0.5
266	1.3	1.4	1.5	1.3	-	1.3	1.4	1.5	1.4	1.2	1.2	1.3	-	1.3	1.5	-	1.4	-	1.6	1.4	1.5	-

Parcel ID	Change in Depth (Project - Existing) During Dry Days (ft), by WY																					
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
133	-	-	0.1	0.1	-	-0.2	0.3	0.1	0.4	-	0.0	-0.3	-	-	0.0	-	0.0	-	-0.5	0.0	-0.1	-
134	0.3	-	0.1	-0.2	-	0.1	0.1	0.1	0.0	0.7	-	-0.4	-	0.1	-0.1	-	0.2	-	0.2	0.0	-0.1	-
135	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.1	-0.1	0.0	0.0	-0.1
136	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
137	0.0	0.4	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-	-0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.4	-	0.0
138	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
139	0.0	0.1	0.0	0.0	-	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	-	0.0
140	0.3	-	0.1	0.0	-	0.1	0.1	0.0	-0.1	0.0	-	0.0	-	-0.1	0.0	-	0.1	-	0.2	0.1	-0.1	-
141	0.1	-	0.0	-0.3	-	0.0	0.0	0.1	0.1	-	-	-0.5	-	0.2	0.0	-	0.0	-	-0.1	-0.1	0.2	0.0
142	0.1	-	0.0	-	-	-0.1	0.0	0.0	-0.1	0.9	-	0.0	-	0.4	0.0	-	0.0	-	0.0	0.1	0.2	-
143	-	-	-0.1	-	-	-0.4	0.0	0.3	0.4	-	0.2	-0.2	-	-	-0.2	-	0.1	-	-0.1	-0.3	-0.2	-
144	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
145	-	-	-0.1	-	-	-0.1	-	0.0	-	-	-	-	-	-	-0.1	-	-	-	0.3	-0.1	0.1	-
146	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147	-	-	0.0	-	-	-	-	0.0	-0.2	-	-	0.1	-	-	0.0	-	0.0	-	0.1	-	-	-
148	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
149	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150	0.0	0.0	0.0	0.2	-	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.0	0.0
151	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152	0.0	0.0	0.0	0.0	-	0.0	0.0	-0.1	-	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0
153	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
154	-	0.1	-0.3	0.7	-	-0.1	-0.8	0.4	0.0	-	0.1	0.1	-	-	0.1	-	0.1	-	-0.2	-0.3	-0.5	-
155	-	0.1	0.1	-	-	-0.1	-0.1	-0.2	-0.1	-	-	-0.1	-	-	0.1	-0.3	-0.1	-	-0.1	-0.1	0.0	-
156	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
157	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
158	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
159	-0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
160	-	0.0	0.0	-	-	0.0	0.1	0.0	0.0	-	-	0.0	-	-	-0.1	-0.2	0.0	-	0.1	0.1	-0.1	0.0
161	0.0	0.0	0.0	0.2	-	0.0	0.0	0.1	0.2	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.2	-0.1	0.0
162	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
163	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
164	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165	-0.2	0.2	0.5	0.0	-	0.0	-	-	0.1	0.0	-	0.0	0.0	0.1	-	-	-	0.0	0.0	0.0	0.0	0.0
166	0.0	0.0	0.2	-0.1	0.1	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	-	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
168	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
169	0.2	0.0	0.2	-0.2	-	0.1	0.1	0.0	0.1	0.3	-0.1	0.0	-	-0.1	0.1	0.1	0.0	-	0.1	-0.1	0.2	0.2
170	0.2	0.0	0.2	0.3	-	0.1	0.1	-0.1	0.2	0.3	-0.1	0.2	-	0.1	0.1	0.1	0.0	-	0.1	-0.1	0.1	0.1
171	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
172	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
173	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
174	0.0	0.0	0.0	-	-	0.1	-0.2	0.2	0.0	0.0	-	-	-	0.1	0.0	-	0.1	-	0.0	-	0.0	-
175	0.0	0.0	0.0	0.0	-	0.0	0.0	-0.2	-0.1	0.0	0.0	0.0	-	0.0	0.0	-	-0.1	-	0.0	0.0	0.0	-
176	-	0.1	0.1	0.0	-	0.0	-0.1	0.1	0.0	0.0	0.0	0.1	-	-0.1	0.0	-	0.0	-	-0.1	0.1	0.1	-
177	-	-	0.0	0.1	-	0.2	-0.2	0.0	0.4	-0.1	-	-0.5	-	-0.3	0.1	-	0.0	-	0.3	-0.1	0.1	-
178	0.3	-0.2	-0.3	0.5	0.0	-0.4	0.1	-0.1	0.1	0.5	-0.1	-0.7	0.0	0.4	0.2	-0.5	0.0	0.0	-0.2	-0.1	0.4	0.0
179	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180	0.2	0.0	0.0	0.1	-	0.1	0.0	0.1	0.0	0.1	0.0	-0.4	-	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.2
181	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
182	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
183	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
185	0.1	0.1	0.0	0.1	0.4	0.1	0.0	0.2	0.0	0.2	0.2	0.2	-	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.4
186	0.1	0.0	0.0	0.0	-	0.0	0.1	-0.1	-0.1	0.3	-	-0.2	-	-0.1	0.0	-	0.0	0.0	0.0	0.0	0.1	0.0
187	0.1	-0.3	0.2	0.0	-	0.0	0.0	0.1	-0.1	0.0	-	0.1	0.0	0.0	0.1	-	-0.1	0.0	0.0	0.1	0.1	-
188	-	0.0	0.0	-0.1	-	0.0	0.0	0.2	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-0.1	0.0
189	0.3	0.2	0.2	-0.2	0.0	0.2	0.0	0.0	0.0	-0.2	-0.1	0.2	-	0.0	0.1	0.6	0.0	0.0	0.3	0.4	0.0	0.1
190	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
191	0.0	-0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	-0.1	0.0	0.0	0.0
192	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
193	-	-	0.1	-	-	-	-	-0.1	0.1	-	-	-	-	-	-	-	0.1	-	-	-0.1	-	-
194	0.0	0.0	-0.1	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-0.1	0.0	-	0.0	-	0.0	0.0	0.0	-
195	0.0	0.3	-0.8	0.2	0.0	0.0	-0.2	-0.1	-0.4	0.0	0.3	-1.7	-	0.1	-0.1	0.0	0.0	0.0	0.1	0.2	-0.2	0.3
196	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
197	0.3	0.2	-0.1	0.1	-	0.1	0.0	-0.1	0.0	0.4	0.1	-0.3	-	0.3	0.1	0.5	0.0	-	0.2	0.4	0.1	0.1
198	0.4	0.2	0.0	0.5	-	0.2	0.2	-0.2	0.0	0.6	-	0.2	-	0.3	0.3	-	0.1	-	0.1	0.2	0.0	-
199	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
200	0.0	0.0	-0.1	0.0	0.0	0.1	-0.1	-0.1	0.0	0.1	0.0	-0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0
201	0.0	0.0	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-
202	-0.1	0.0	-0.1	-	-	0.0	0.0	-0.1	0.1	0.0	-	-	-	0.0	0.0	-	0.0	-	-0.1	0.0	0.0	-
203	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
204	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
205	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
206	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
207	-	-0.1	-0.1	0.0	-	0.0	-0.1	0.0	0.0	0.0	0.0	-0.2	-	-	0.1	-	0.0	-	-0.1	-0.1	-0.3	-
208	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
209	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-
211	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
212	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
213	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
214	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
215	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
216	-	0.0	0.0	0.0	-	-0.1	-0.1	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1	-	0.0
217	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
218	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
219	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
221	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0
222	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	-	0.0	0.1	0.1	0.0
223	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
224	-	0.0	0.0	0.1	-	0.0	-0.1	0.0	-0.2	0.0	-	0.2	-	0.1	0.1	-	0.0	-	-0.1	0.1	0.1	-
225	-	0.0	0.0	-0.1	-	0.0	0.0	-0.2	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.1	0.0
226	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
227	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	0.0	-	0.1	-	0.0	-	-	-
228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
229	0.0	0.0	-0.1	-0.3	0.0	-0.3	0.0	-0.1	-0.4	-0.1	0.0	-0.4	-	-0.2	0.0	-0.1	0.0	0.0	-0.3	-0.2	0.2	0.0
230	0.0	0.0	0.0	-0.2	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.3	0.0	0.0
231	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
233	0.0	0.0	0.1	-	-	0.0	0.0	0.3	0.0	0.0	-	-	-	0.0	0.0	-	0.1	-	0.0	0.0	0.0	-
234	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	0.0
236	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-
237	-	-	-	-	-	-	0.0	-0.1	0.1	0.0	-	-0.1	-	-	-	-	-	-	-0.2	-	-0.2	-
238	-0.1	-	0.1	0.0	-	0.0	-0.1	0.0	-0.1	0.0	-	-0.2	-	-0.1	0.2	-	0.1	-	0.0	0.0	0.0	-
239	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240	0.0	0.0	-0.1	-0.1	0.0	-0.2	-0.2	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.2	0.0
241	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-0.1	0.0	-	-	-	0.0	-0.1	-	0.0	-	0.0	0.0	0.0	-
242	-	-	0.0	-	-	-0.1	0.0	0.1	0.0	0.0	-	-0.4	-	0.0	-0.1	-	0.0	-	0.0	0.1	0.0	-
243	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	-	0.0	0.1	-	0.1	-	0.0	-0.1	0.0	-
244	0.0	0.0	0.0	-	-	0.0	0.1	0.0	-	0.0	-	-	-	0.0	-	-	0.0	-	-	-	0.0	-
245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
246	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	0.1	0.0	0.0	0.1	0.1	-0.1	0.0
247	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
248	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	-	-
250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
251	0.0	-	-0.1	-	-	0.0	0.0	0.1	-0.4	-0.3	0.2	0.4	-	-0.1	0.1	-	-0.1	-	0.1	0.0	0.1	-
252	0.0	0.1	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
253	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
254	-0.1	0.0	0.0	-0.6	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
255	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256	0.0	0.0	0.0	0.2	0.0	0.0	-0.2	0.0	-0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.6	0.0
257	0.4	-	-0.1	0.1	-	0.0	0.0	0.0	-0.3	0.2	-0.1	-0.2	-	0.0	0.0	-	-0.1	-	0.1	0.1	0.1	-
258	0.1	0.0	0.0	0.2	-	-0.1	-0.1	0.0	-0.1	-0.1	-	0.0	0.0	-0.2	-0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.0
259	0.0	-	0.4	-	-	-0.3	0.1	0.2	0.0	0.3	-	0.1	-	0.1	0.1	-	-0.6	-	-	0.1	0.1	-
260	-0.1	0.1	-0.1	-0.1	-	0.0	0.0	0.1	-0.1	-0.2	-0.2	-0.1	-	-0.1	0.0	-	0.1	-	0.0	-0.1	-0.2	-
261	-0.4	-	0.0	-	-	-0.4	0.0	0.0	0.1	0.0	-	-	-	-0.1	-0.2	-	0.0	-	0.0	0.0	0.0	-
262	0.0	0.1	0.0	0.0	-	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	-	0.1	0.0	-	0.0	-	-0.1	0.1	0.1	-
263	-0.1	-0.1	0.0	0.0	-	0.0	0.1	0.0	-0.2	0.0	0.0	0.0	-	0.0	0.1	0.0	0.1	-	0.1	-0.2	-0.1	0.0
264	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265	-0.1	0.0	-0.2	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0
266	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-	0.0	0.0	-	0.0	-	0.0	0.0	-0.1	-

Parcel ID	Avg. Dry Day Inundated Area	Avg. Dry Day Depth (ft)	Avg. Change in Depth During Dry Days (ft)	Avg. Dry Day Inundated Area
133	0.1	0.4	0.0	0.1
134	0.6	0.6	0.0	0.6
135	1.1	0.5	0.0	1.0
136	0.7	0.2	0.0	0.7
137	0.6	0.2	0.0	0.6
138	0.5	0.1	0.0	0.5
139	1.3	0.3	0.0	1.4
140	0.5	0.4	0.0	0.5
141	3.4	0.7	0.0	3.4
142	0.5	0.4	0.1	0.4
143	0.2	0.4	0.0	0.1
144	0.7	0.1	0.0	0.7
145	0.2	0.4	0.0	0.2
146	2.3	0.8	0.0	2.3
147	0.1	0.3	0.0	0.0
148	0.7	0.1	0.0	0.7
149	0.2	0.1	0.0	0.3
150	1.6	0.8	0.0	1.7
151	0.7	0.6	0.0	0.7
152	0.4	0.1	0.0	0.4
153	0.4	0.2	0.0	0.4
154	0.5	0.4	0.0	0.5
155	0.4	0.5	0.0	0.4
156	0.0	0.0	0.0	0.0
157	0.3	0.2	0.0	0.3
158	0.6	0.1	0.0	0.6
159	0.6	0.5	0.0	0.6
160	0.5	0.4	0.0	0.5
161	0.6	0.4	0.0	0.6
162	2.1	0.9	0.0	2.1
163	0.5	0.1	0.0	0.5
164	0.8	0.2	0.0	0.7
165	0.1	0.1	0.0	0.1
166	2.1	0.8	0.0	1.9
167	0.0	0.0	0.0	0.0
168	1.0	2.5	0.0	1.0
169	1.2	2.6	0.0	1.2
170	0.7	2.3	0.1	0.7
171	-	-	-	-
172	1.3	2.6	0.0	1.3
173	0.0	0.0	0.0	0.0
174	0.4	2.4	0.0	0.4
175	0.3	2.4	0.0	0.3
176	0.3	0.5	0.0	0.3
177	0.6	0.7	0.0	0.5
178	0.5	4.5	0.0	0.5
179	6.8	1.2	0.0	6.7
180	1.2	1.6	0.0	1.3
181	0.0	0.0	0.0	0.0
182	0.0	0.0	0.0	0.0
183	-	-	-	-
184	7.8	5.3	0.0	7.7
185	2.0	5.3	0.1	2.1
186	0.3	0.5	0.0	0.4
187	0.4	0.2	0.0	0.3
188	0.6	0.2	0.0	0.5
189	1.5	1.8	0.1	1.5
190	6.3	2.0	0.0	6.3
191	0.9	1.4	0.0	0.9
192	2.4	3.1	0.0	2.6
193	0.0	0.0	0.0	0.2
194	0.6	2.3	0.0	0.6
195	1.4	3.8	-0.1	1.6
196	14.1	14.8	0.0	14.1
197	1.1	5.0	0.1	1.1
198	1.2	0.7	0.1	1.4
199	6.0	1.3	0.0	6.0
200	1.4	1.2	0.0	1.3
201	0.1	0.1	0.0	0.1
202	0.7	1.0	0.0	0.7
203	2.9	2.2	0.0	2.9
204	2.4	1.0	0.0	2.3
205	2.1	1.5	0.0	2.1
206	1.0	0.4	0.0	0.9
207	0.3	0.4	0.0	0.2
208	0.0	0.0	0.0	0.0
209	6.2	15.9	0.0	6.2
210	0.0	0.0	0.0	0.0
211	1.8	0.8	0.0	1.8
212	3.0	1.0	0.0	3.0
213	8.9	1.1	0.0	8.9
214	13.2	0.4	0.0	13.2
215	1.1	0.5	0.0	1.2
216	2.1	0.4	0.0	1.9
217	5.6	0.9	0.0	5.5
218	0.0	0.0	0.0	0.0
219	0.0	0.0	0.0	0.0
220	0.0	0.0	0.0	0.0
221	2.7	5.0	0.0	2.7
222	0.3	0.8	0.0	0.2
223	4.5	4.0	0.0	4.5
224	0.2	0.3	0.0	0.2
225	0.6	0.2	0.0	0.6
226	-	-	-	-
227	0.1	0.0	0.0	0.1
228	-	-	-	-
229	0.5	2.4	-0.1	0.5
230	0.8	2.8	0.0	0.7
231	1.8	6.0	0.0	1.8
232	-	-	-	-
233	1.0	4.6	0.0	1.0
234	0.0	0.0	0.0	0.0
235	0.0	0.0	0.0	0.0
236	25.0	4.4	0.0	25.0
237	0.0	0.1	0.0	0.0
238	0.5	0.6	0.0	0.5
239	-	-	-	-
240	17.7	15.1	-0.1	17.7
241	1.2	1.4	0.0	1.2
242	0.6	0.6	0.0	0.6
243	0.3	2.5	0.0	0.3
244	0.4	0.5	0.0	0.4
245	0.0	0.0	0.0	0.0
246	2.3	1.1	0.0	2.2
247	0.0	0.0	0.0	0.0
248	-	-	-	-
249	5.3	0.6	0.0	5.3
250	6.2	1.8	0.0	6.0
251	0.4	0.7	0.0	0.4
252	0.7	0.3	0.0	0.8
253	0.8	0.6	0.0	0.8
254	2.4	0.6	0.0	2.2
255	-	-	-	-
256	1.9	0.4	0.0	1.8
257	0.7	0.6	0.0	0.8
258	0.8	0.2	0.0	0.6
259	0.2	0.6	0.0	0.2
260	0.3	0.8	0.0	0.4
261	0.3	0.4	0.0	0.2
262	0.6	0.9	0.0	0.7
263	0.5	0.8	0.0	0.5
264	27.3	1.0	0.0	27.3
265	3.6	0.8	0.0	3.4
266	0.5	1.0	0.0	0.5

Waterfowl Season Summary WYs 1997 - 2018

Average Dry Day Inundated Area (%), Existing Conditions by WY

Owner	APN	Parcel ID	Parcel Area	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	71 DEEDS413	267	36	0.8	0.0	1.0	0.9	0.0	1.1	0.9	1.4	0.2	0.8	0.0	0.7	0.0	0.7	0.6	0.0	0.6	0.0	0.9	0.5	1.3	0.0
	71 DEEDS492	268	19	0.2	0.1	0.1	0.3	0.0	0.6	0.7	0.2	0.0	0.5	0.0	0.2	0.0	0.4	0.4	0.0	0.1	0.0	0.1	0.3	0.3	0.0
	79 DEEDS141	269	31	1.1	3.6	3.1	1.0	1.6	3.1	1.3	3.2	2.5	0.4	1.3	1.6	0.7	0.8	1.3	0.4	2.9	0.1	0.5	1.6	2.5	0.7
	79 DEEDS151	270	29	0.8	0.1	0.4	0.1	0.0	0.3	0.8	0.4	0.2	0.8	0.0	0.1	0.0	0.3	0.2	0.0	0.5	0.0	0.5	0.4	0.5	0.0
	79 DEEDS164	271	1	0.0	0.0	0.2	0.2	0.0	0.8	0.3	0.4	0.6	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0
	79 DEEDS26	272	140	2.1	0.4	2.9	2.2	0.0	2.6	3.5	2.6	2.3	2.7	0.0	1.3	0.0	1.1	2.2	0.0	1.7	0.0	1.4	0.9	2.1	0.0
	85 DEEDS430	273	51	1.1	2.2	2.6	1.2	2.3	3.1	0.5	2.5	3.5	1.3	2.8	1.2	0.7	1.1	1.8	1.5	0.6	0.3	1.1	2.0	2.7	2.6
	85 DEEDS430	274	175	14.3	14.1	20.7	15.5	16.2	15.8	10.7	13.8	16.3	15.8	17.1	14.9	14.1	15.8	16.6	15.8	14.3	13.1	11.3	11.6	15.4	17.5
	97 DEEDS170	275	42	1.6	4.7	4.2	1.1	0.9	4.2	0.9	3.5	2.0	1.1	1.0	1.8	0.3	0.7	3.5	1.4	2.4	0.3	1.3	1.7	2.5	0.7
DEFTY FAM TRUST	057 030 01	276	112	0.3	1.5	8.8	2.1	0.4	5.1	5.6	5.5	6.4	2.0	0.1	3.0	0.2	3.1	5.9	0.3	8.6	0.1	7.7	3.0	3.7	1.5

Average Dry Day Depth (ft), Existing Conditions by WY

Owner	APN	Parcel ID	Parcel Area	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	71 DEEDS413	267	36	0.4	0.3	0.4	0.5	-	0.4	0.4	0.4	0.4	0.4	-	0.4	-	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.5	0.4
	71 DEEDS492	268	19	0.3	0.2	0.3	0.3	-	0.3	0.3	0.2	0.3	0.3	-	0.4	-	0.4	0.3	-	0.3	-	0.3	0.4	0.3	-
	79 DEEDS141	269	31	0.2	0.3	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2
	79 DEEDS151	270	29	0.9	0.8	0.9	0.8	-	0.6	1.0	0.8	0.8	0.9	1.1	0.8	-	1.1	0.8	-	1.1	-	1.0	0.9	1.1	-
	79 DEEDS164	271	1	-	-	0.9	0.9	-	0.8	0.7	0.9	0.8	1.0	-	0.8	-	-	-	-	0.9	-	-	1.0	-	-
	79 DEEDS26	272	140	2.7	1.1	2.1	2.4	-	2.3	2.5	2.4	2.1	2.7	-	2.3	-	2.4	1.9	0.7	2.1	-	2.0	2.2	2.7	-
	85 DEEDS430	273	51	0.8	1.1	0.6	0.7	0.8	0.9	0.9	1.0	0.8	0.7	0.7	0.7	0.8	0.6	0.7	0.9	0.6	0.8	1.0	1.0	0.8	0.8
	85 DEEDS430	274	175	4.8	4.7	4.0	4.6	4.6	4.5	5.0	4.7	4.5	4.5	4.5	4.7	4.8	4.5	4.5	4.5	4.7	4.8	4.9	4.9	4.7	4.5
	97 DEEDS170	275	42	0.6	0.6	0.5	0.5	0.4	0.6	0.5	0.5	0.4	0.5	0.5	0.6	0.3	0.4	0.7	0.8	0.5	0.6	0.6	0.4	0.4	0.5
DEFTY FAM TRUST	057 030 01	276	112	0.6	0.5	2.3	1.0	0.2	1.5	1.5	2.3	1.5	0.7	0.5	0.8	0.2	0.8	1.8	0.5	2.6	0.2	2.7	1.4	1.1	0.7

Change in Depth (Project - Existing) During Dry Days (ft), by WY

Owner	APN	Parcel ID	Parcel Area	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg. Dry Day Inundated Area	Avg. Dry Day Depth (ft)	Avg. Change in Depth During Dry Days (ft)	Avg. Dry Day Inundated Area
	71 DEEDS413	267	36	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.0	0.5
	71 DEEDS492	268	19	0.1	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.1	-	-0.1	0.1	0.0	-	0.2	0.2	0.0	0.2
	79 DEEDS141	269	31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.2	0.0	1.5
	79 DEEDS151	270	29	0.1	0.1	-0.1	0.1	-	0.1	-0.1	0.0	0.0	0.0	0.1	0.1	-	0.0	-0.1	-	-0.2	-	-0.1	0.0	0.0	-	0.3	0.7	0.0	0.3
	79 DEEDS164	271	1	-	-	0.0	-0.1	-	0.1	0.0	0.1	0.2	0.0	-	-	-	-	-	-	-	-	-	-0.2	-	-	0.2	0.4	0.0	0.3
	79 DEEDS26	272	140	0.3	0.2	0.1	0.5	-	-0.1	0.2	-0.4	0.1	0.3	-	-0.1	-	0.0	0.0	0.5	0.1	-	0.1	-0.1	-0.4	-	1.4	1.6	0.1	2.5
	85 DEEDS430	273	51	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	1.7	0.8	0.0	1.7
	85 DEEDS430	274	175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	4.6	0.0	15.1
	97 DEEDS170	275	42	-0.3	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.5	0.0	1.6
DEFTY FAM TRUST	057 030 01	276	112	0.0	0.0	0.0	-0.1	0.0	0.2	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	1.1	0.0	3.4

Notes:

1 "-" = N/A

2 Annual values not shown. Annual averages shown for comparison to existing conditions.

Attachment E

Figure 1

TUFLOW Model − Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (WY 1997 − 2018), Existing Conditions

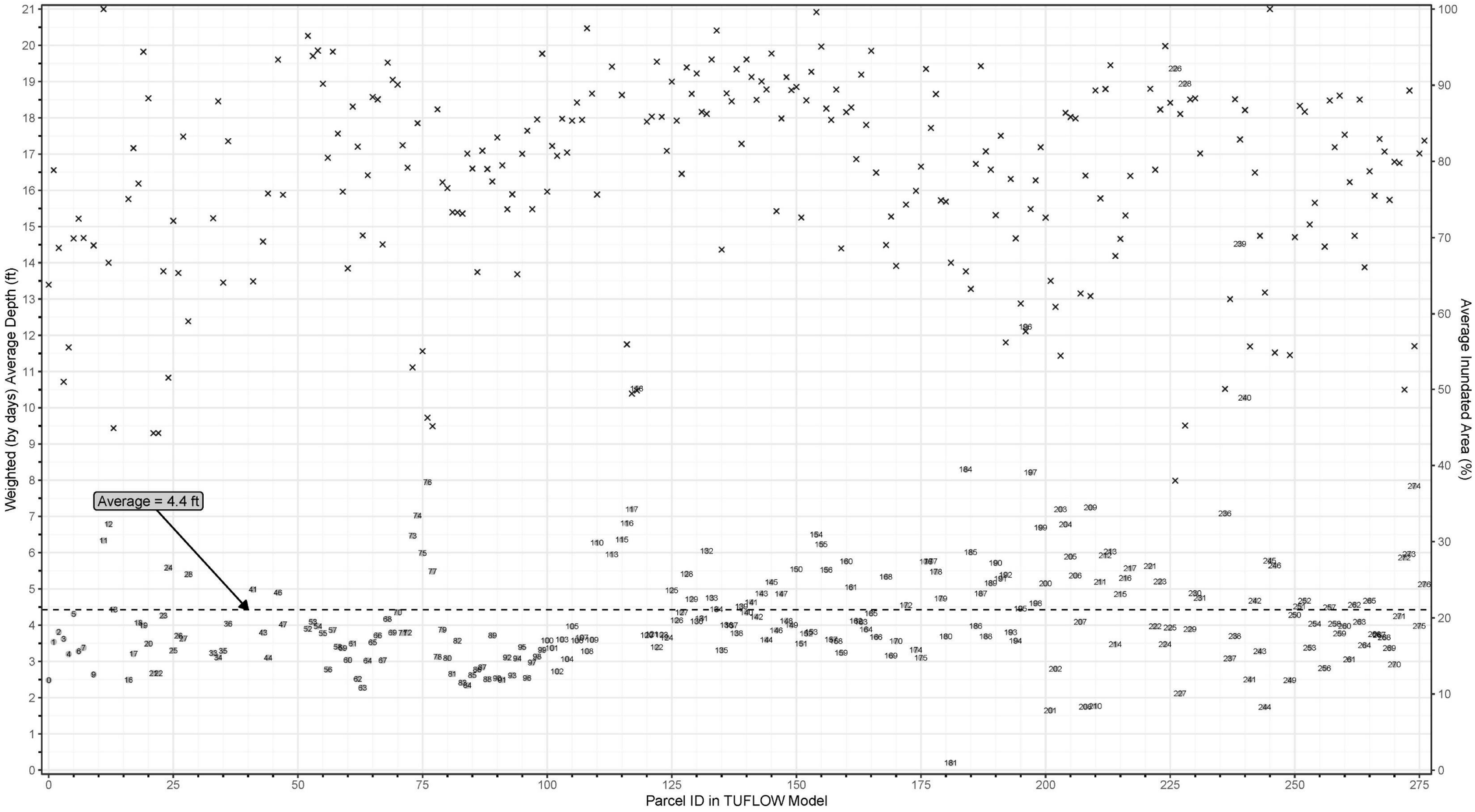


Figure 2

TUFLOW Model − Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Wet WYs), Existing Conditions

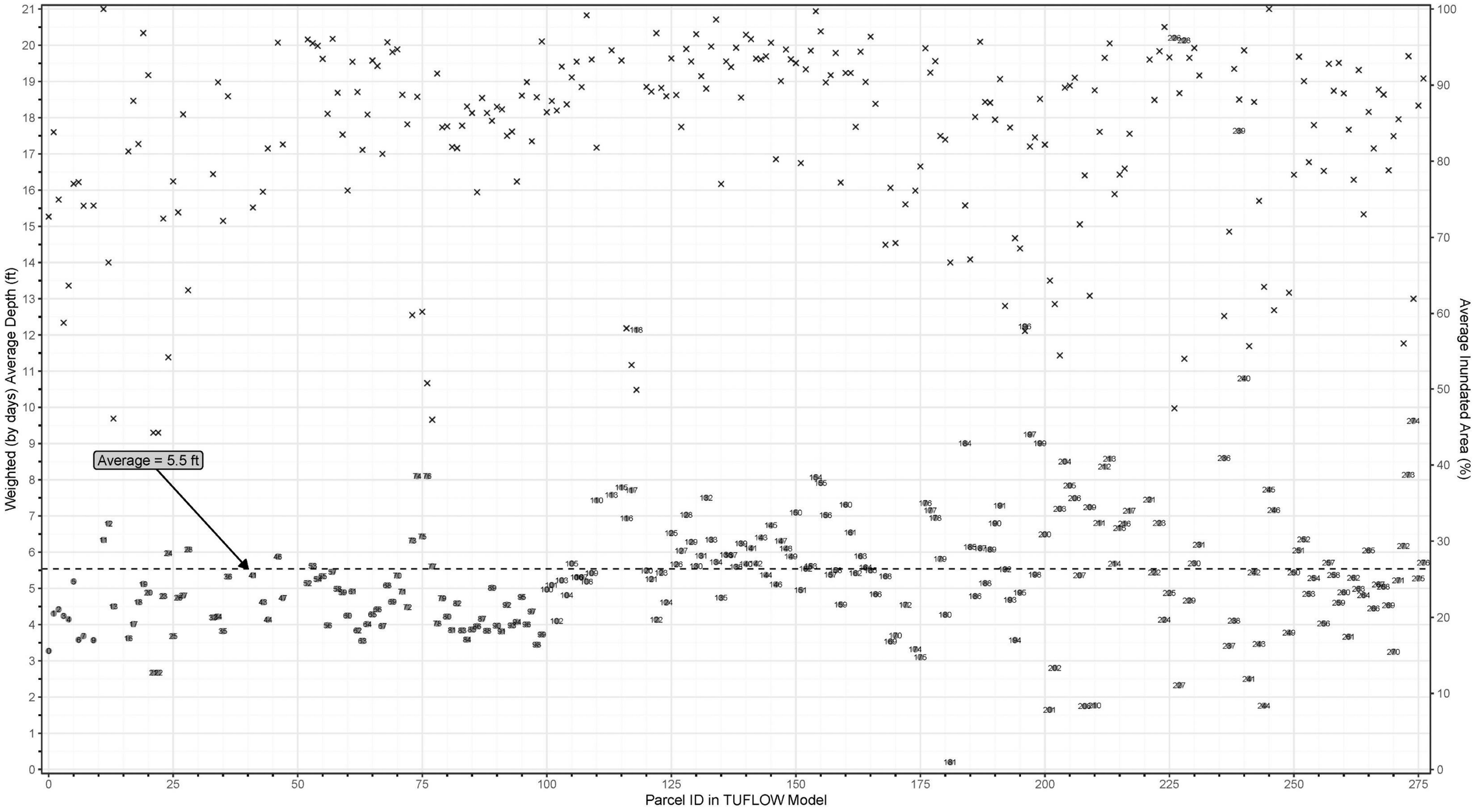


Figure 3

TUFLOW Model − Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Above Normal WYs), Existing Conditions

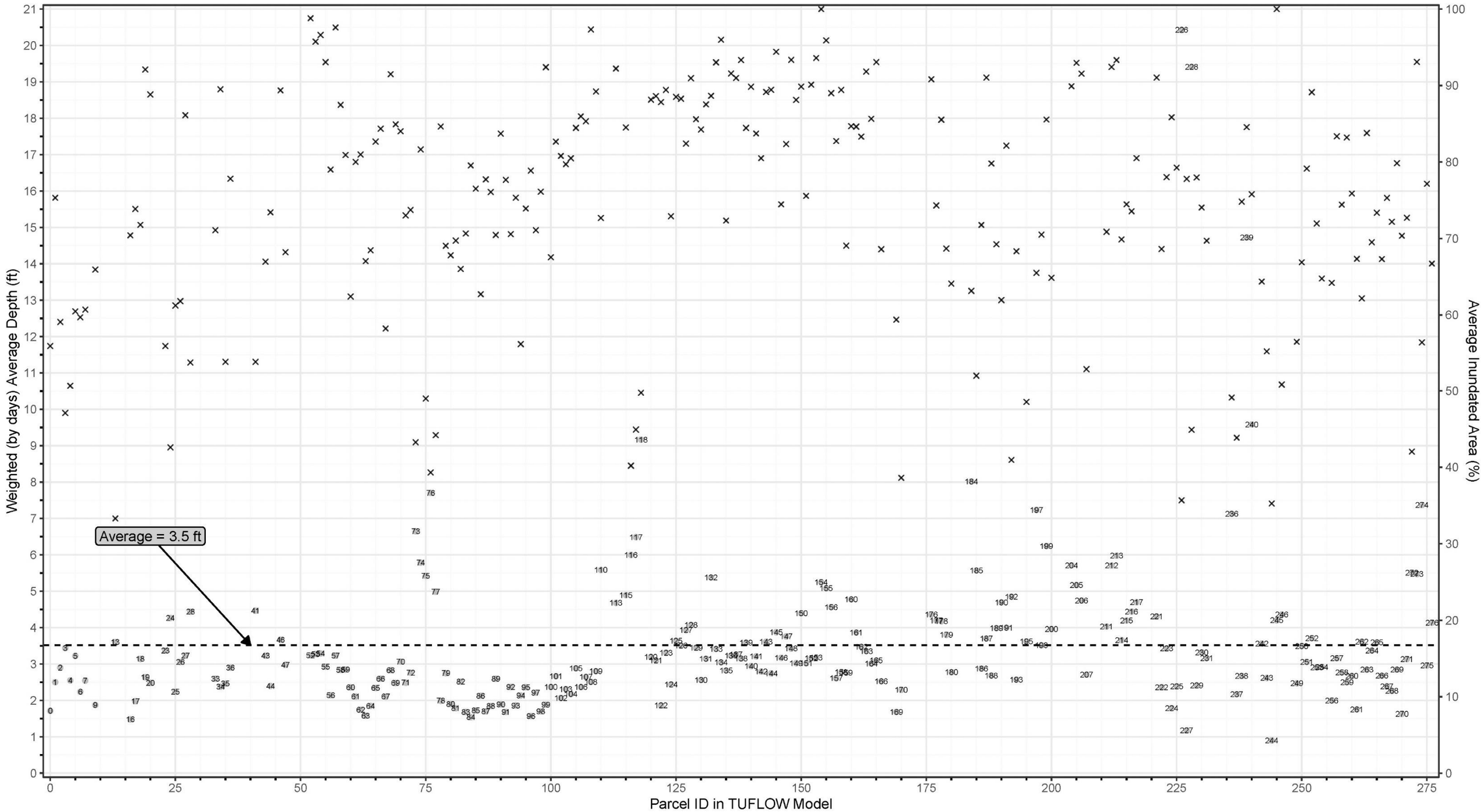


Figure 3

TUFLOW Model − Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Below Normal WYs), Existing Conditions

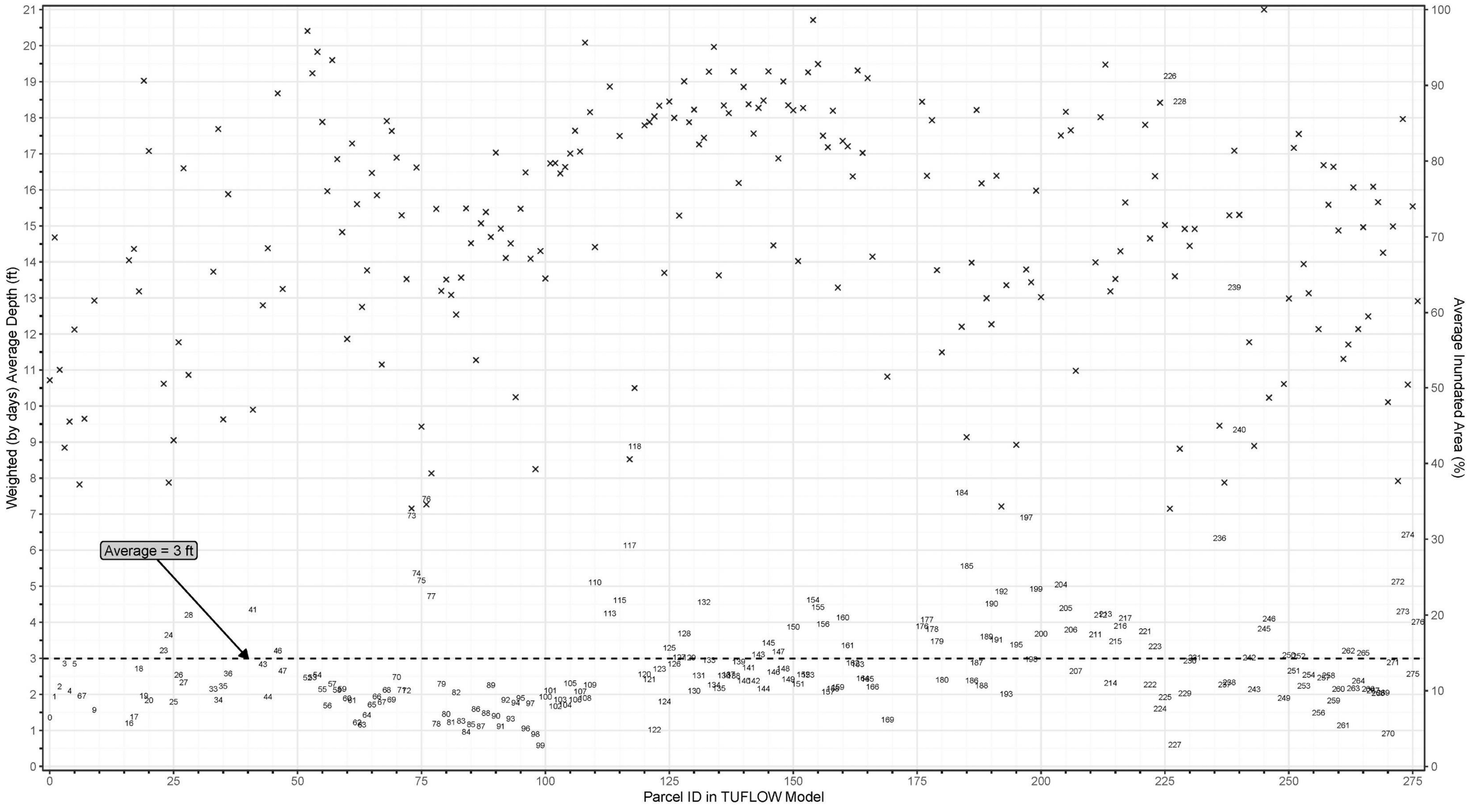


Figure 4

TUFLOW Model − Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Dry WYs), Existing Conditions

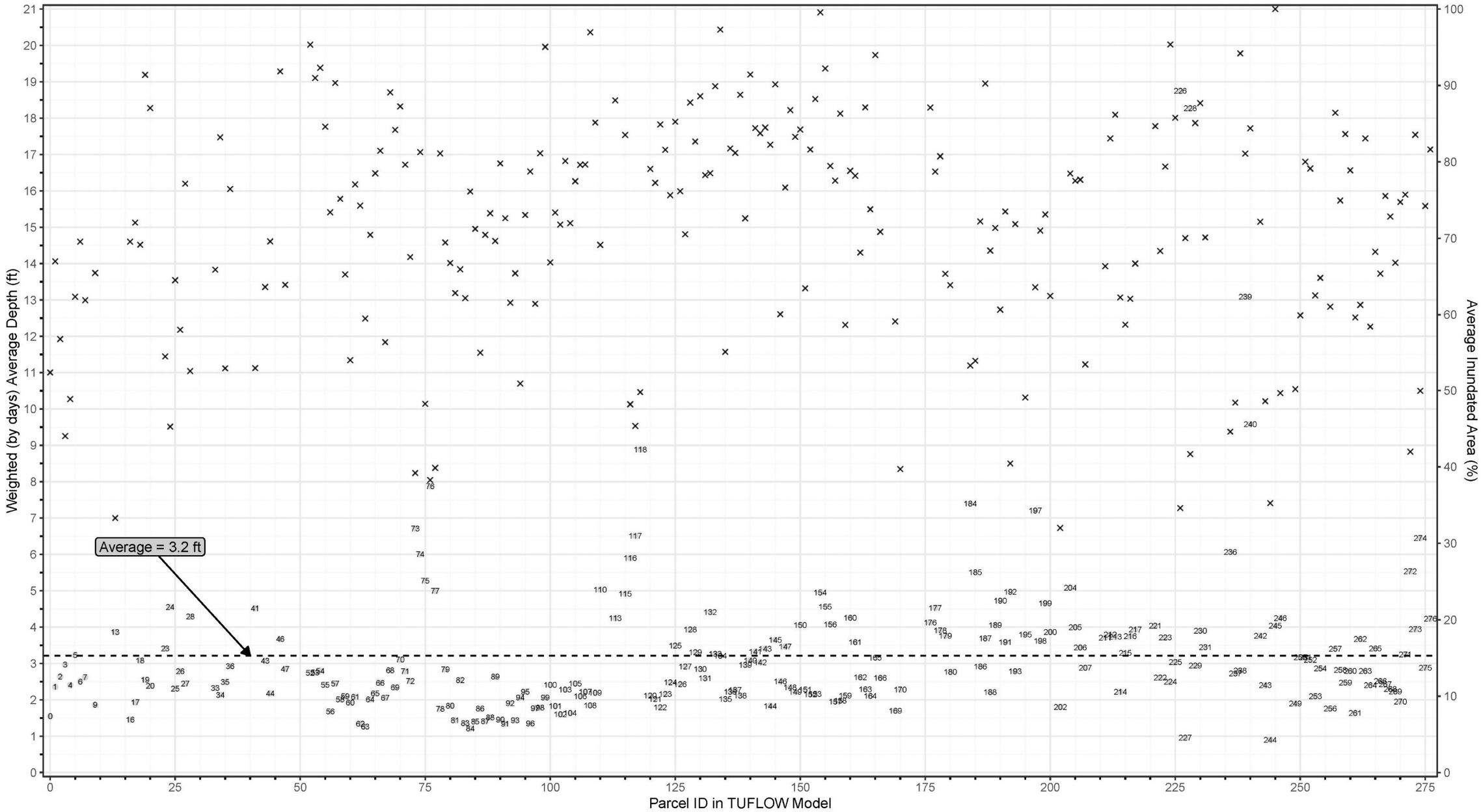


Figure 5

TUFLOW Model − Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Critical WYs), Existing Conditions

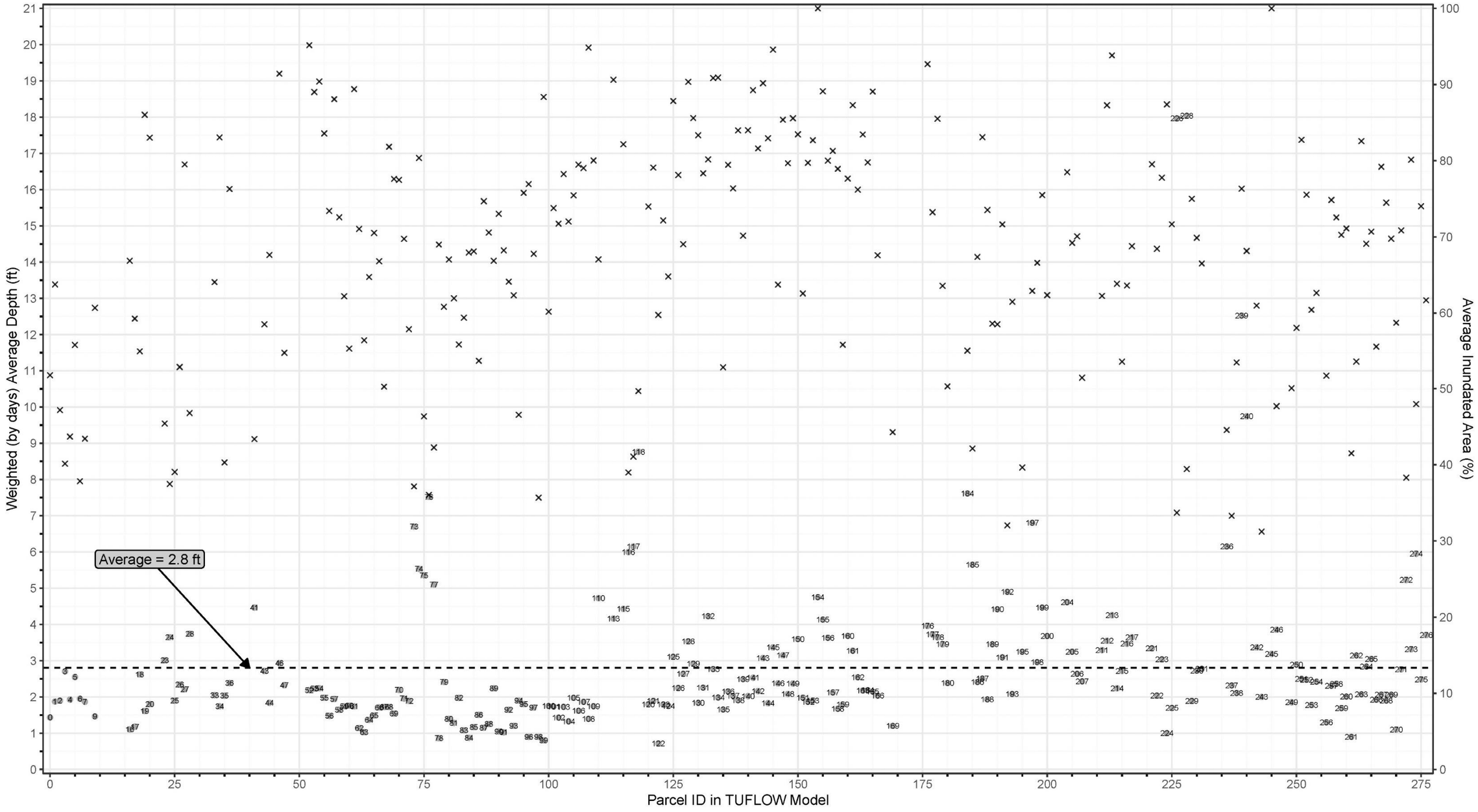


Figure 6

TUFLOW Model − Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (WY 1997 − 2018), Existing Conditions

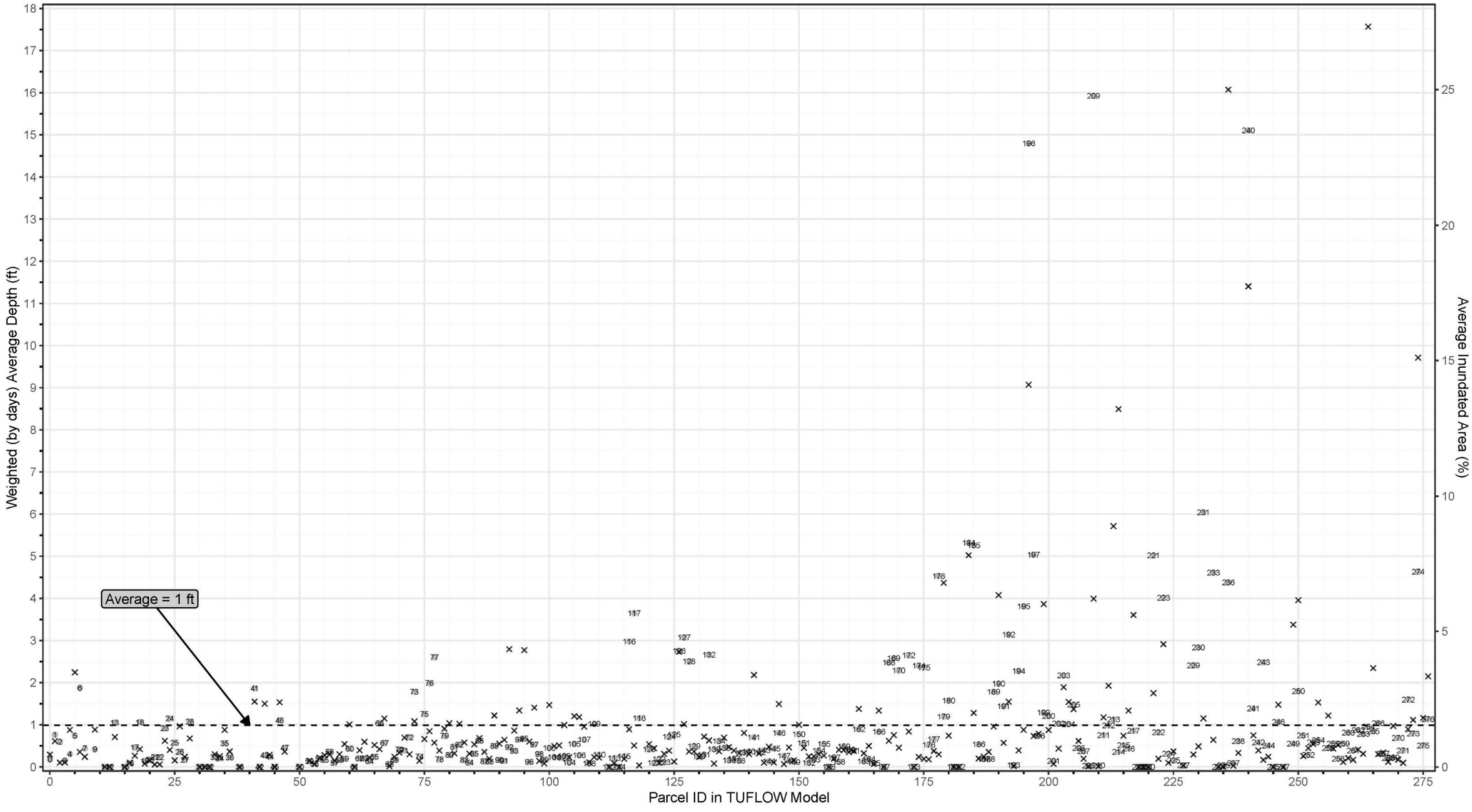


Figure 7

TUFLOW Model − Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Wet WYs), Existing Conditions

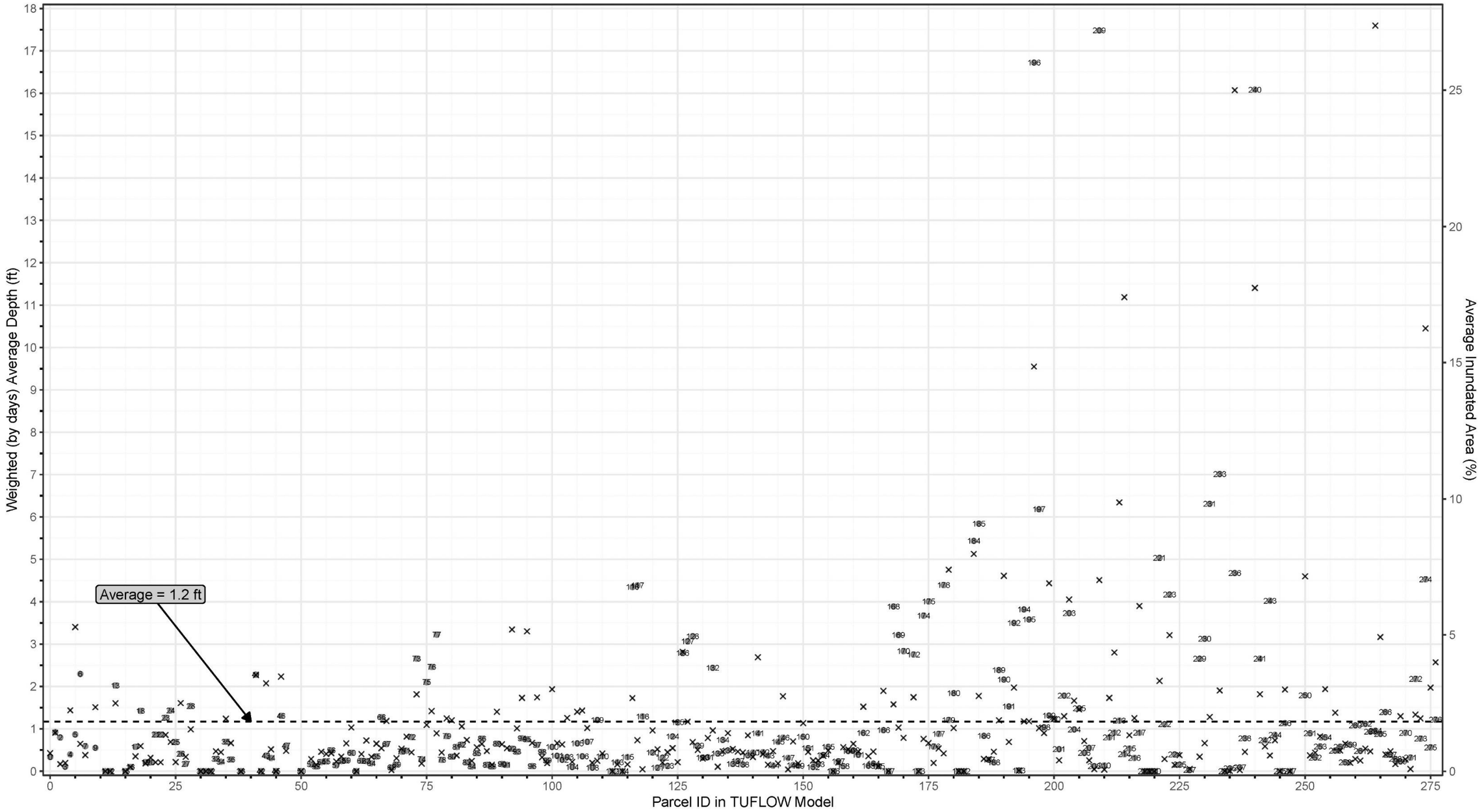


Figure 8

TUFLOW Model − Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Above Normal WYs), Existing Conditions

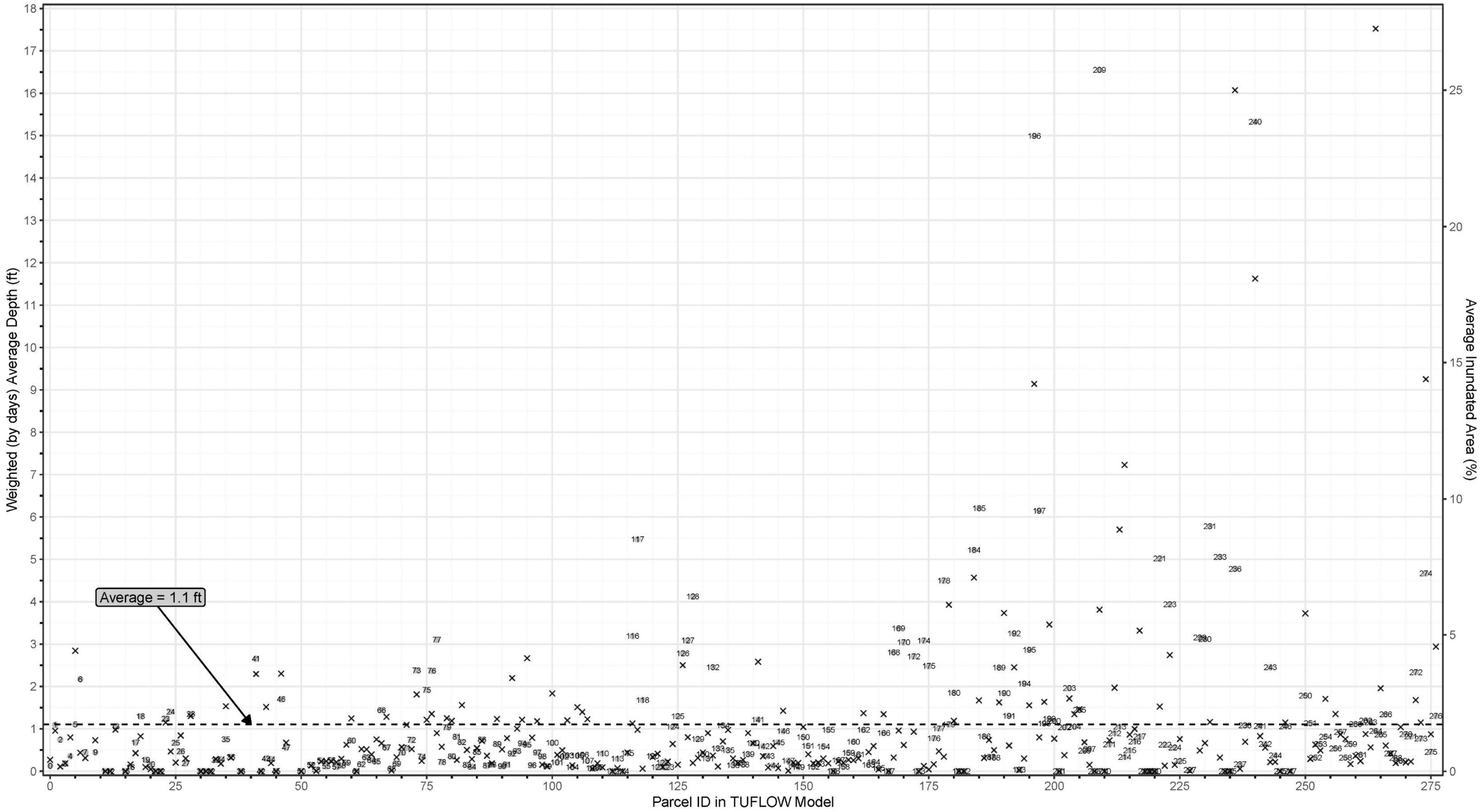


Figure 9

TUFLOW Model − Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Below Normal WYs), Existing Conditions

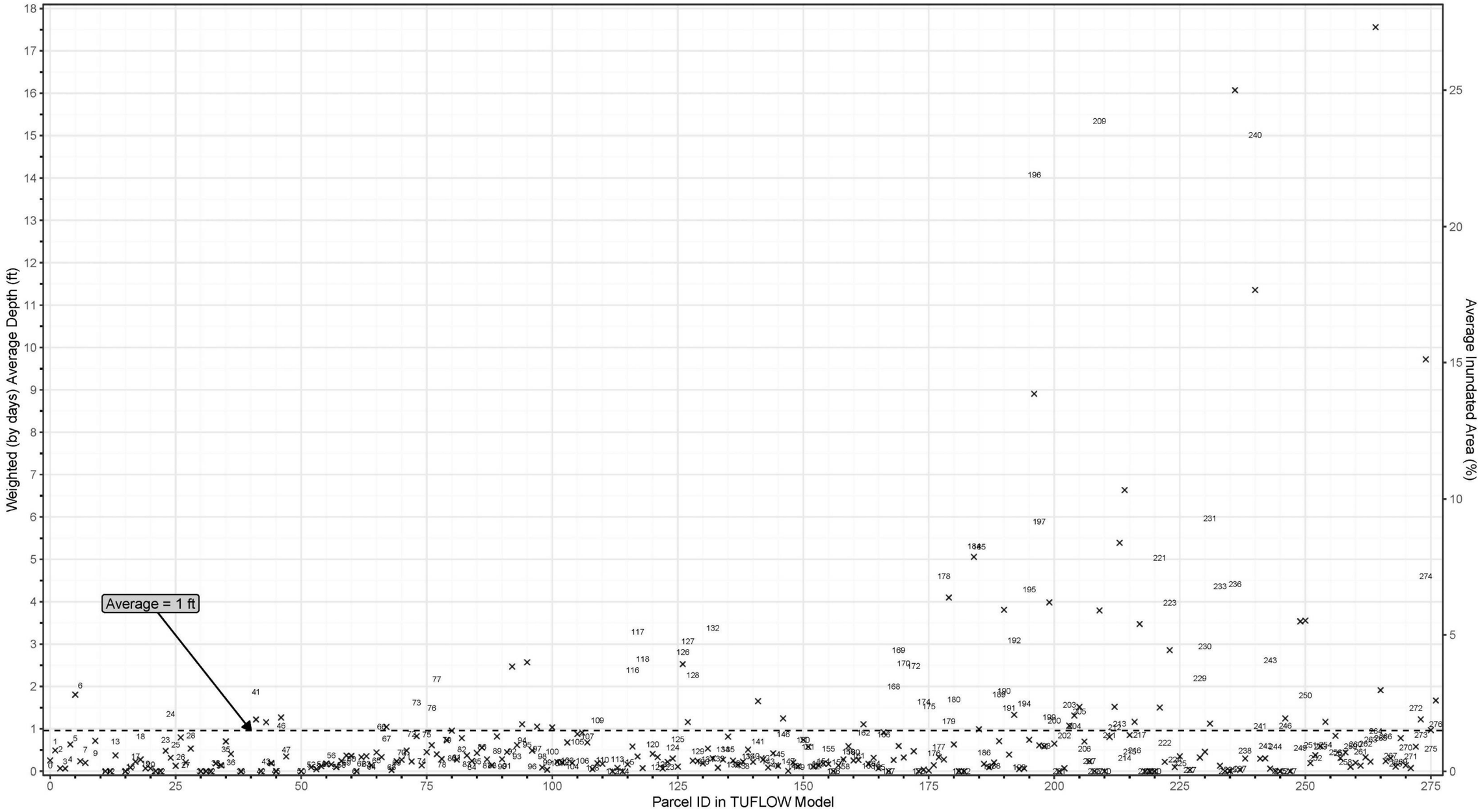


Figure 10

TUFLOW Model − Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Dry WYs), Existing Conditions

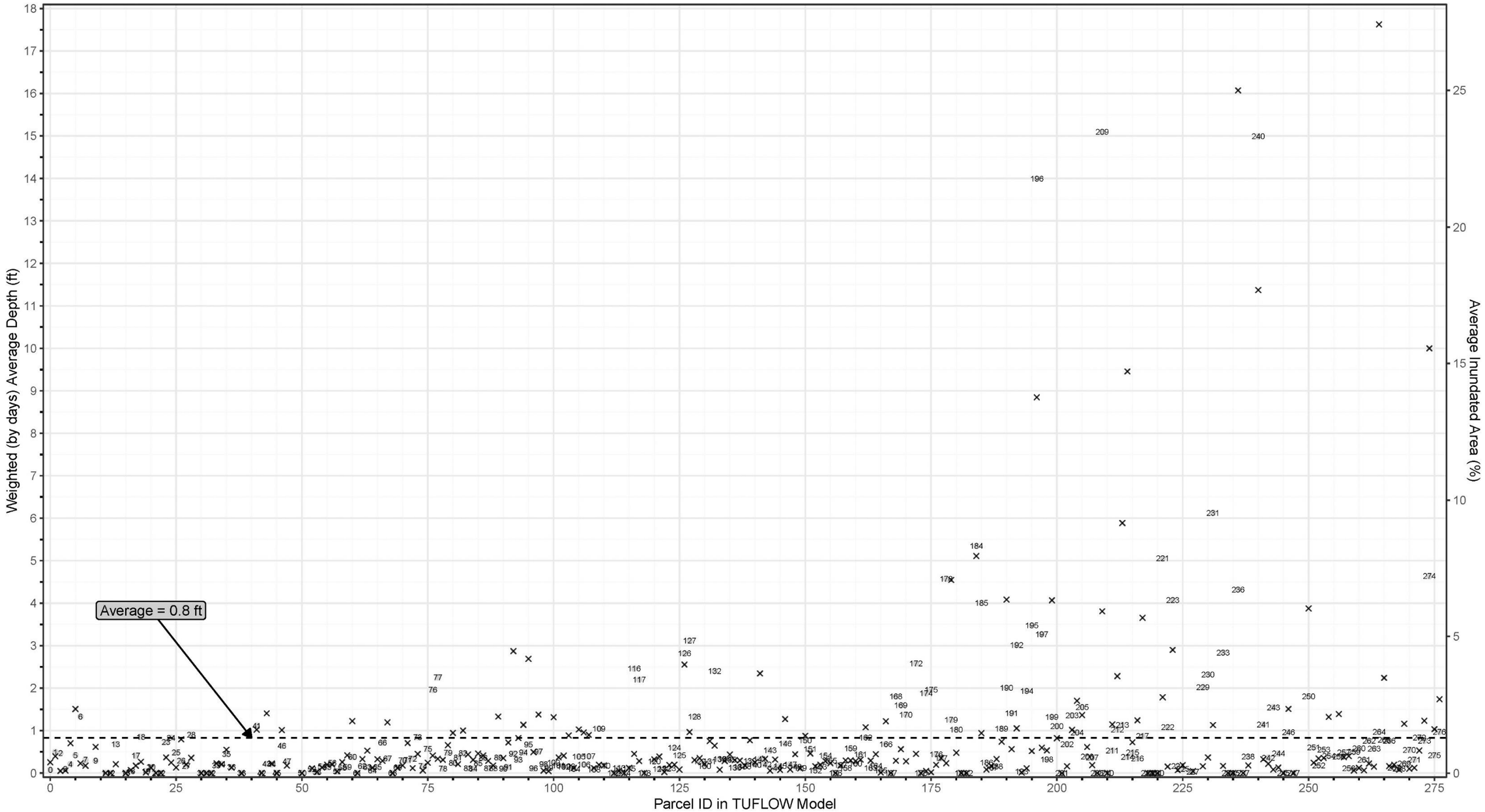


Figure 11

TUFLOW Model − Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Critical WYs), Existing Conditions

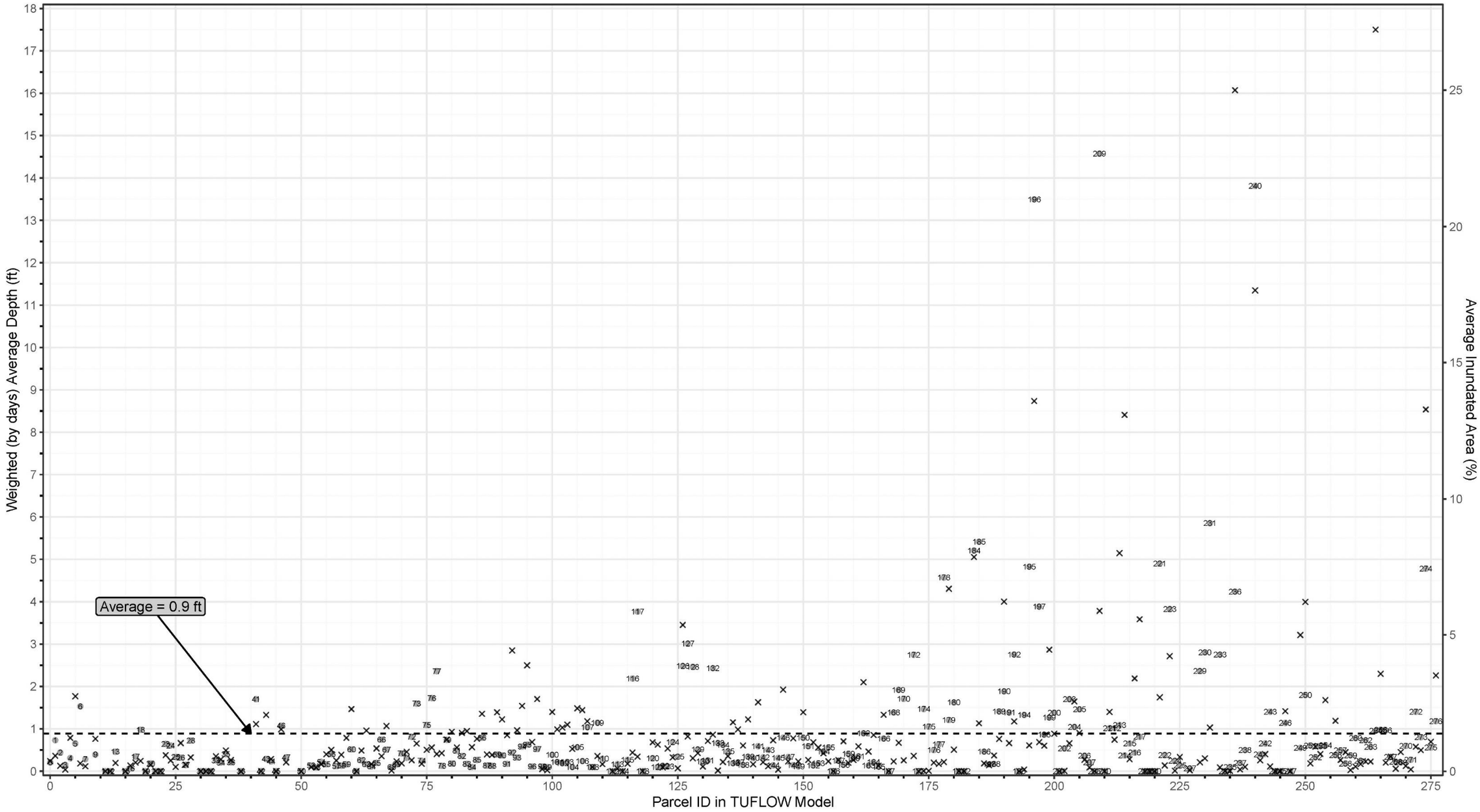


Figure 12

TUFLOW Model − Change in Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (WY 1997 − 2018), Project Conditions

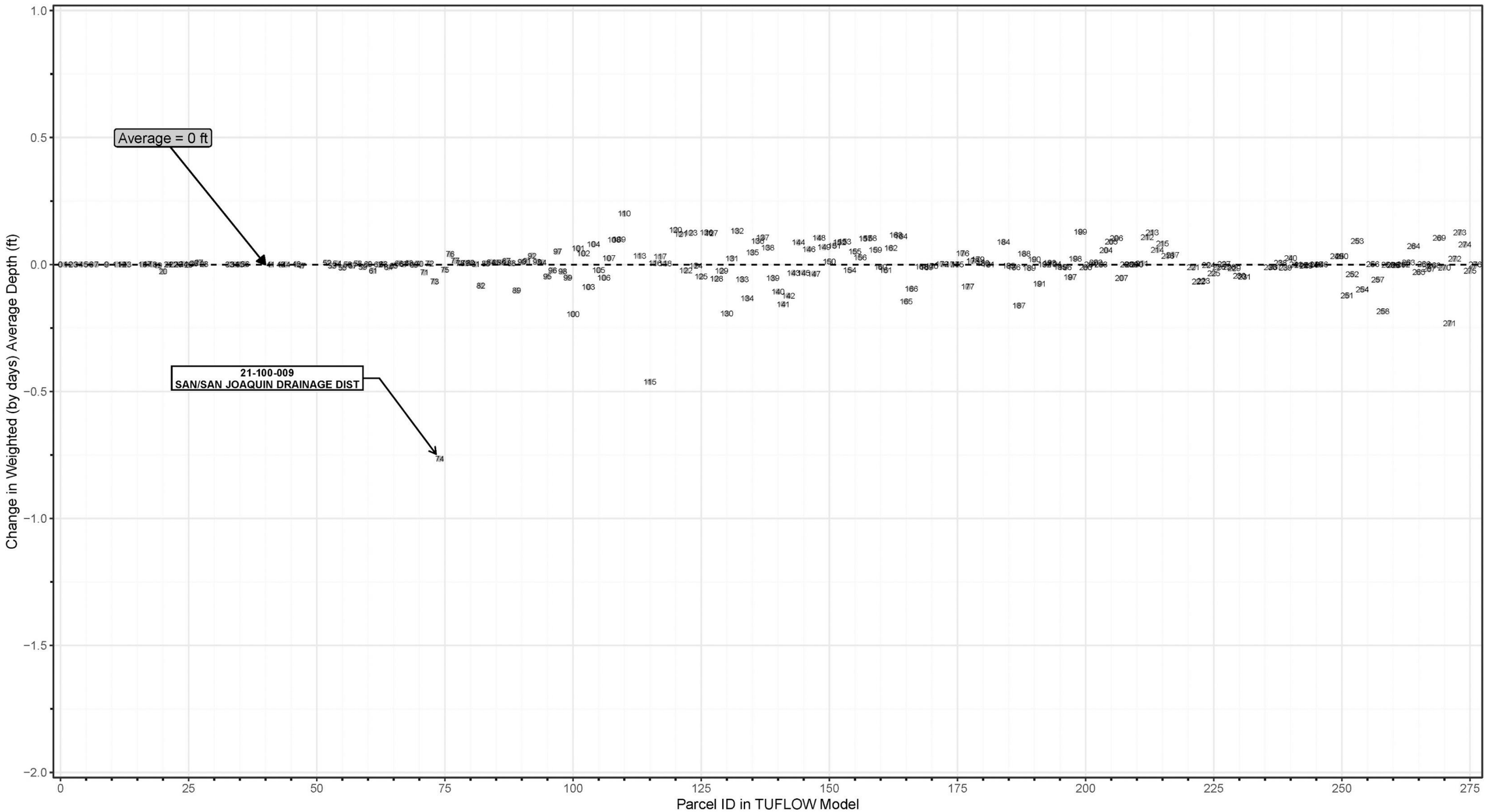


Figure 13

TUFLOW Model − Change in Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Wet WYs), Project Conditions

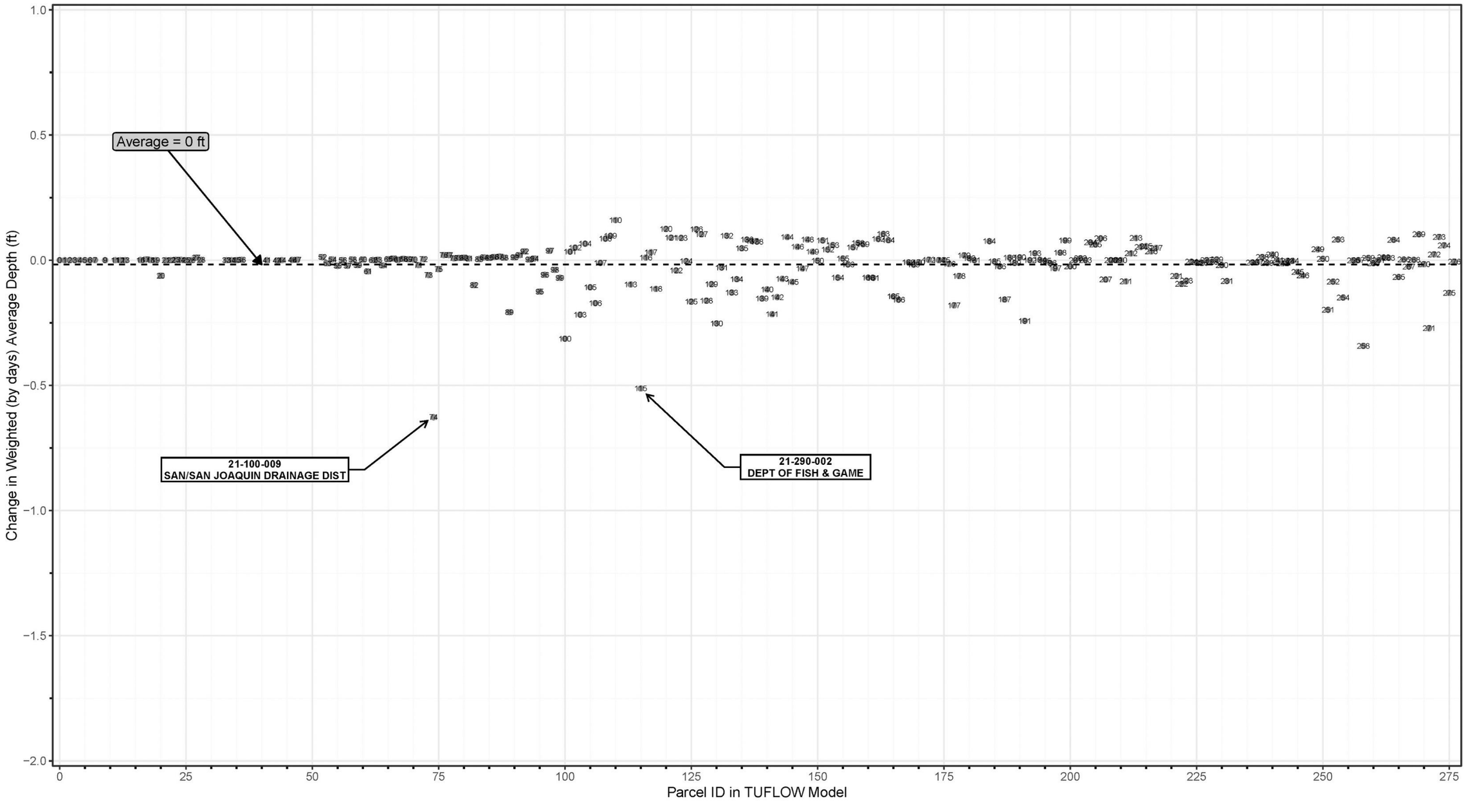


Figure 14

TUFLOW Model − Change in Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Above Normal WYs), Project Conditions

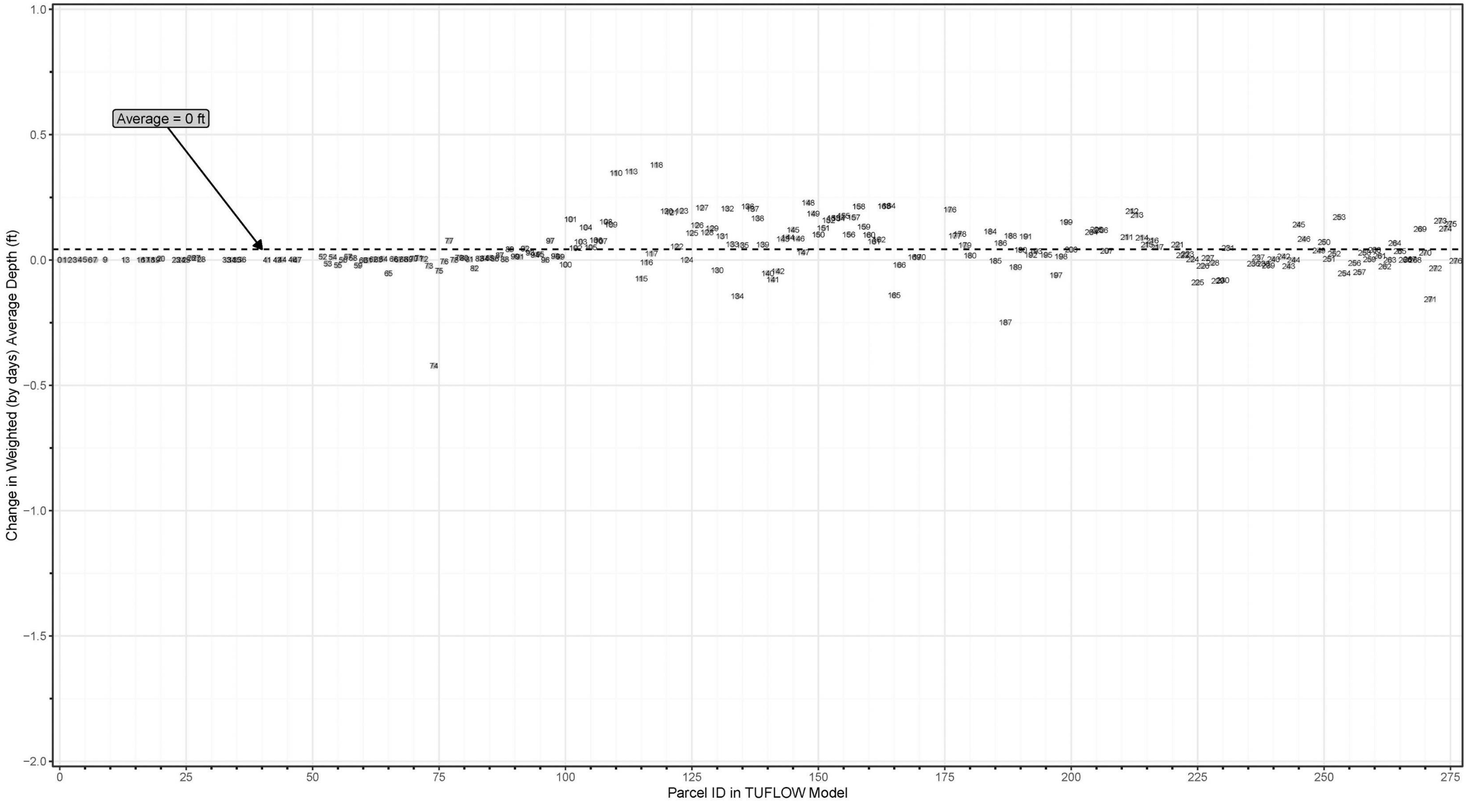


Figure 15

TUFLOW Model − Change in Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Below Normal WYs), Project Conditions

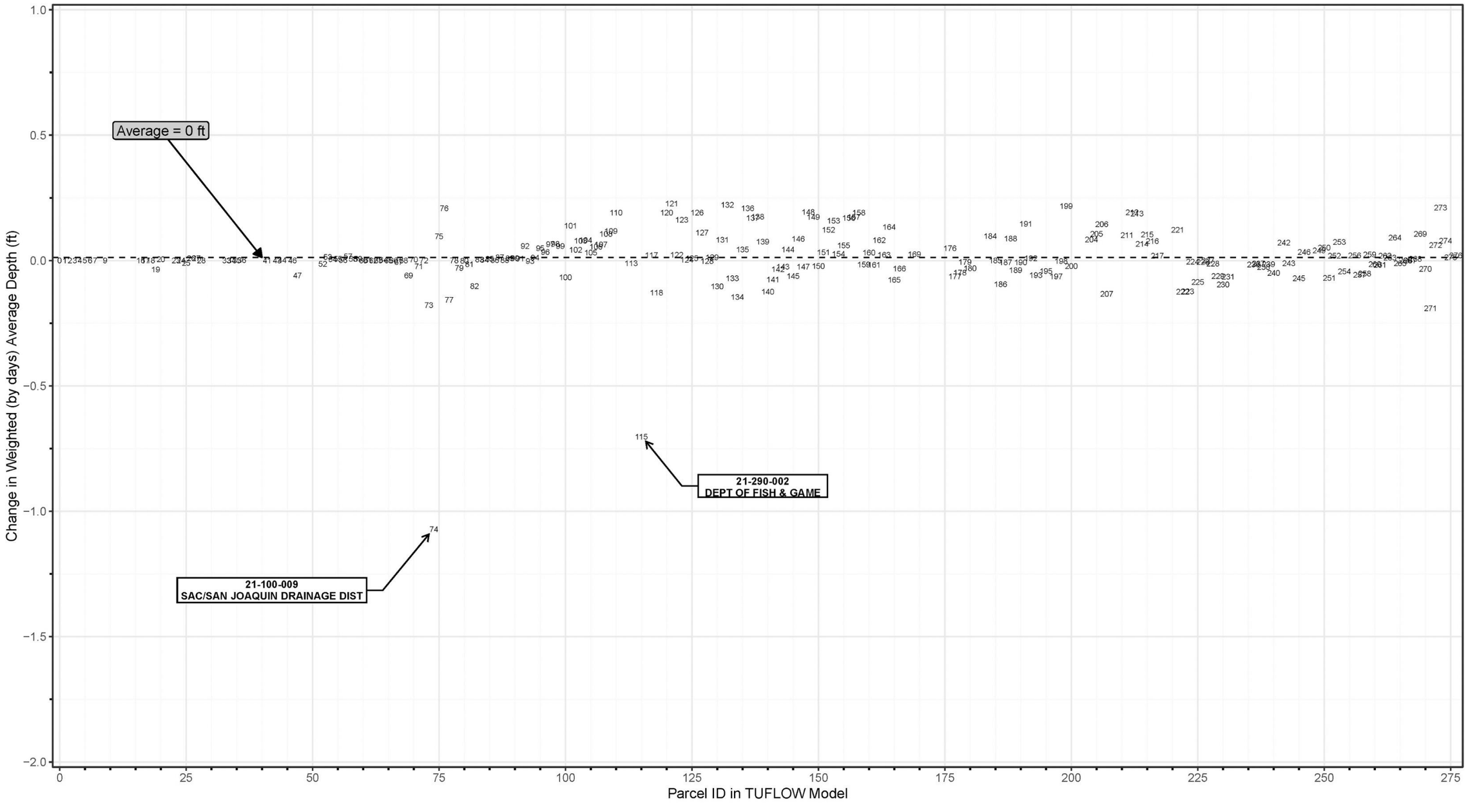


Figure 16

TUFLOW Model − Change in Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Dry WYs), Project Conditions

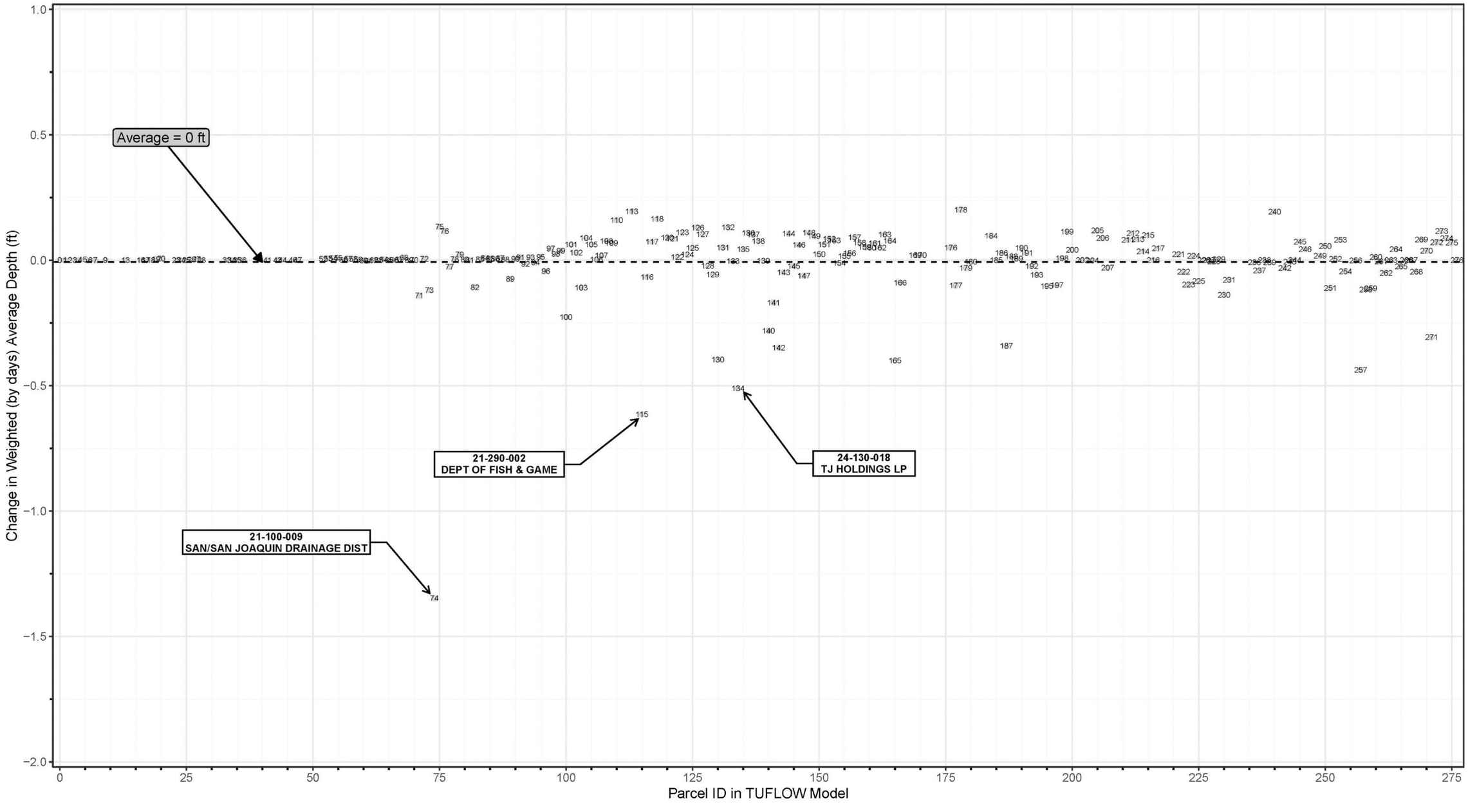


Figure 17

TUFLOW Model − Change in Average Depth by Parcel (Wet Days)
Tisdale and Sutter Bypass (Critical WYs), Project Conditions

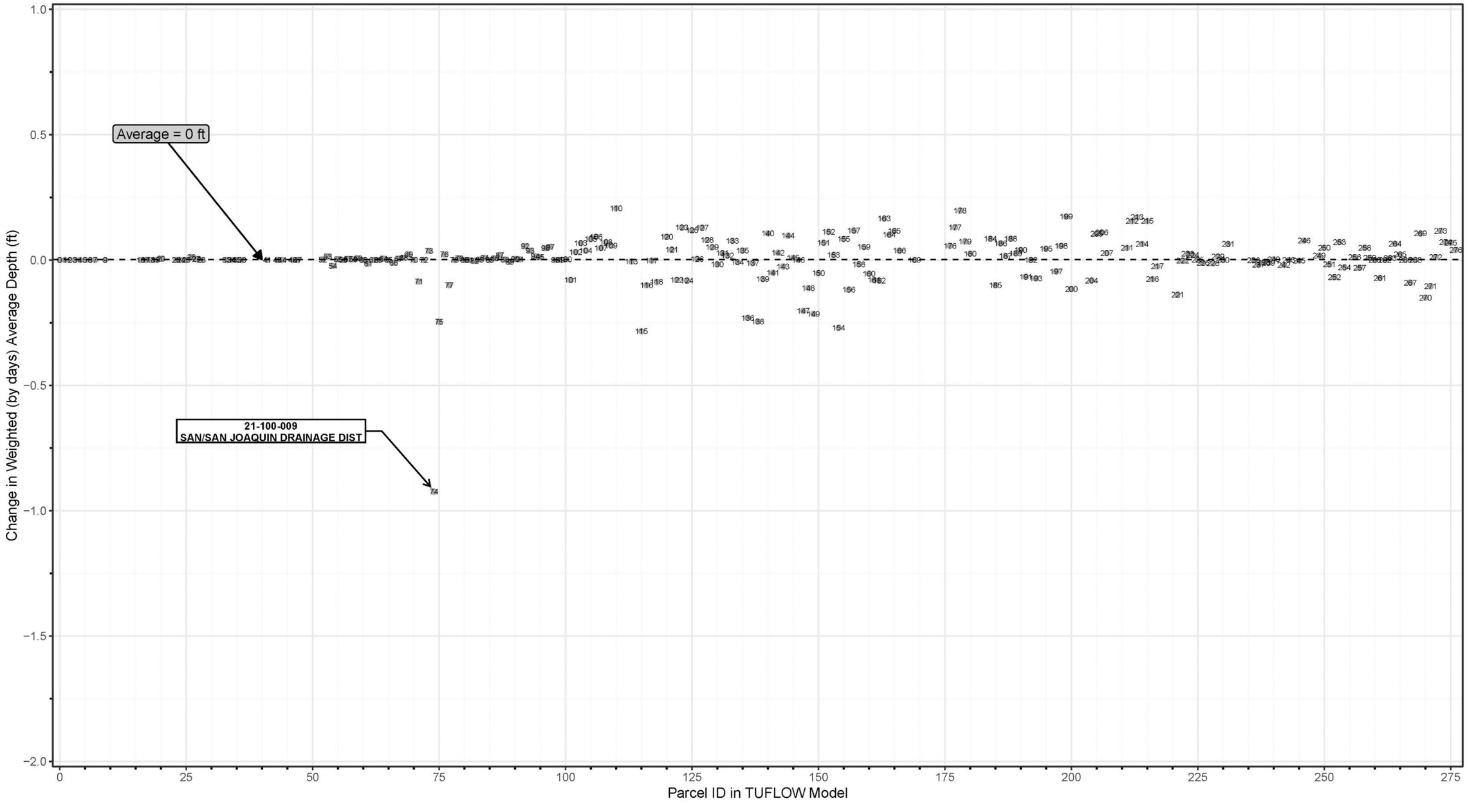


Figure 18

TUFLOW Model − Change in Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (WY 1997 − 2018), Project Conditions

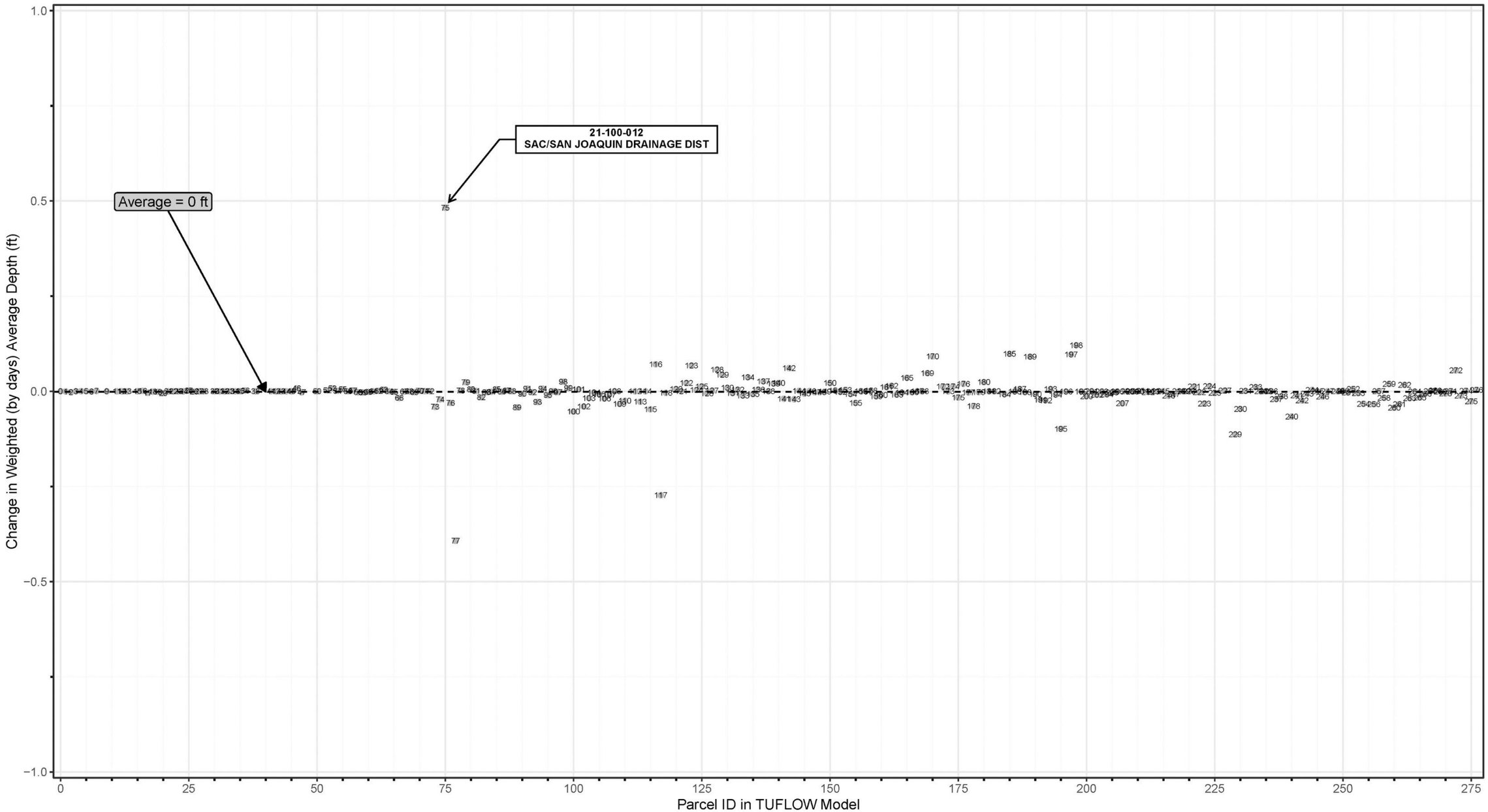


Figure 19

TUFLOW Model − Change in Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Wet WYs), Project Conditions

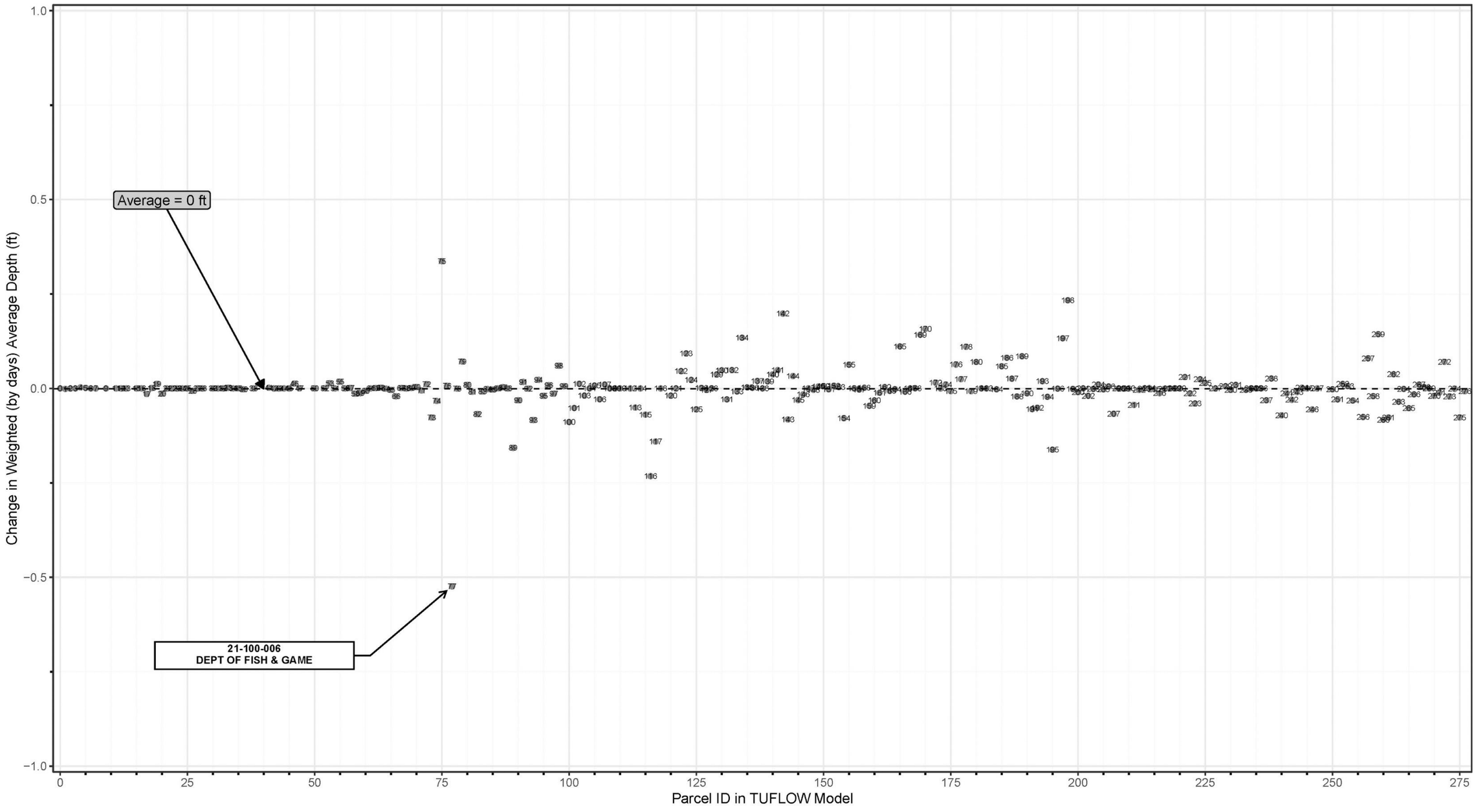


Figure 20

TUFLOW Model − Change in Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Above Normal WYs), Project Conditions

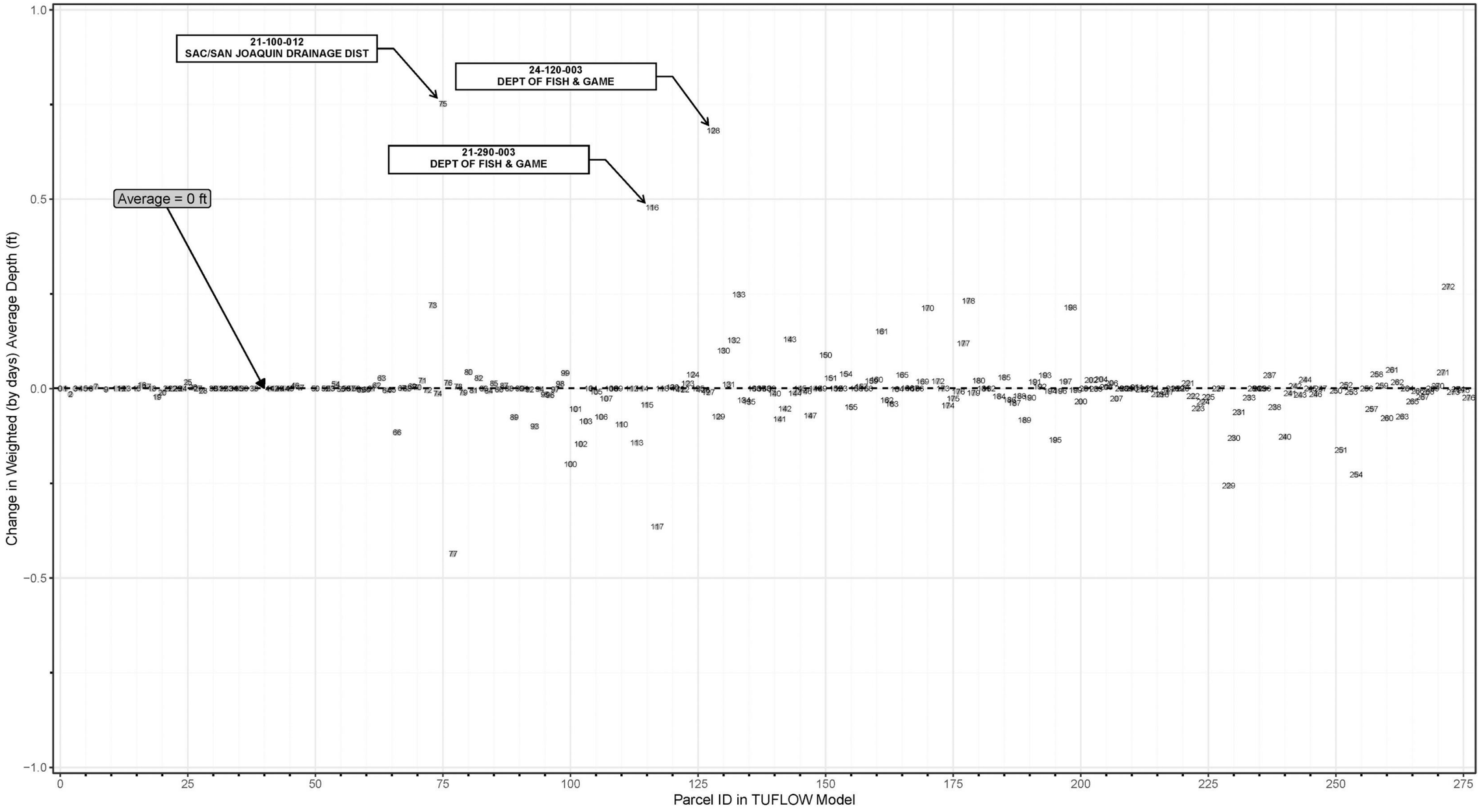


Figure 21

TUFLOW Model − Change in Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Below Normal WYs), Project Conditions

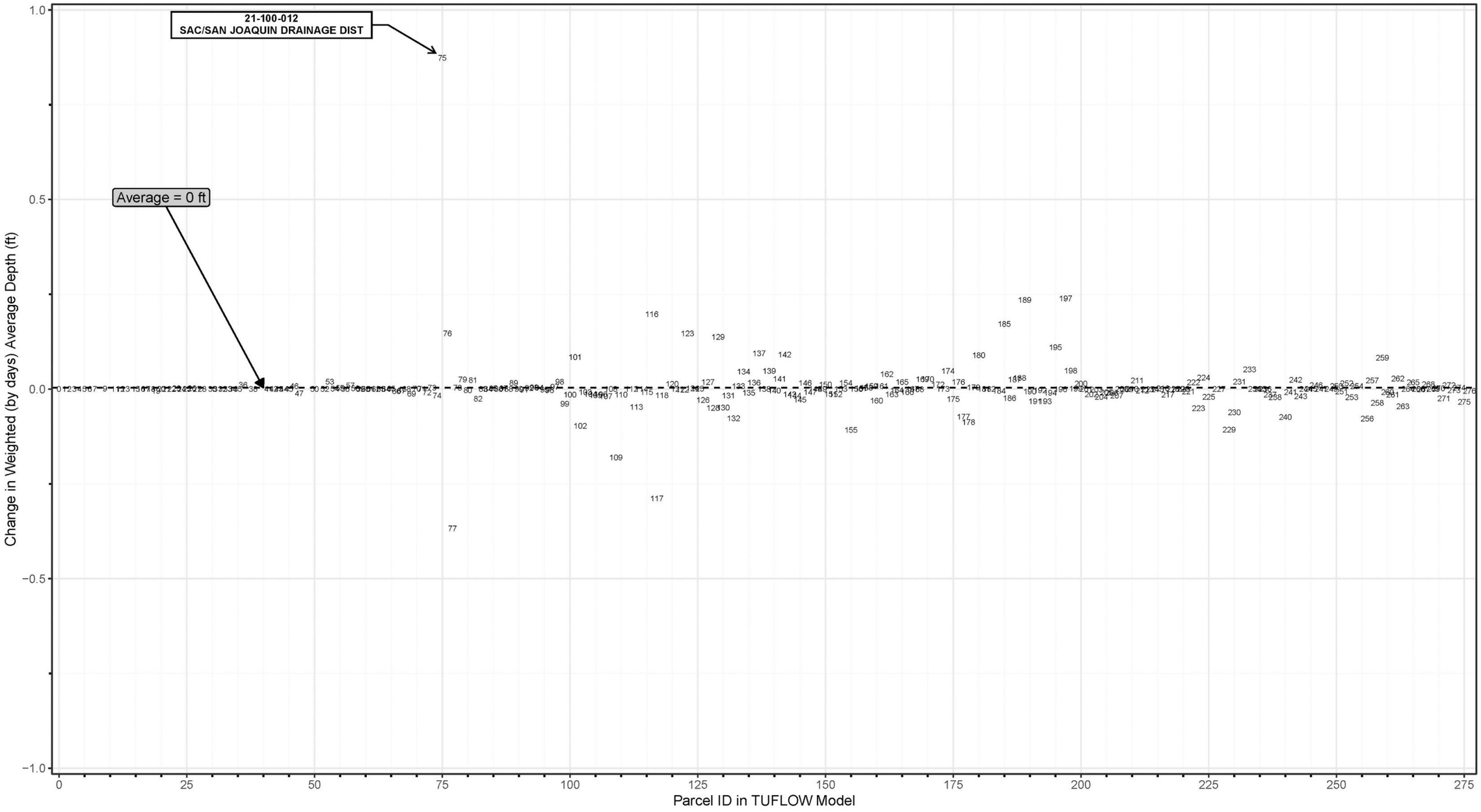


Figure 22

TUFLOW Model − Change in Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Dry WYs), Project Conditions

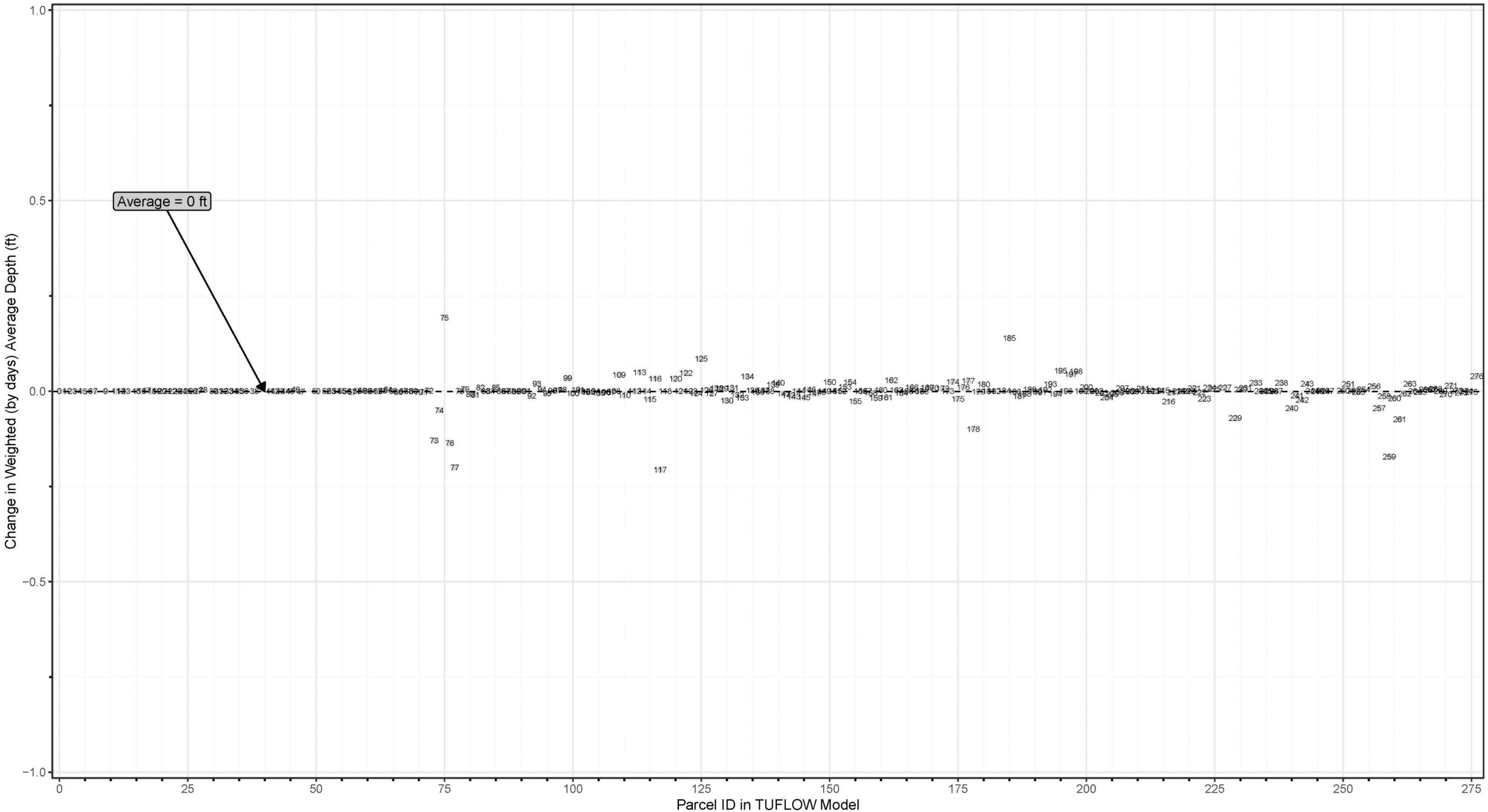
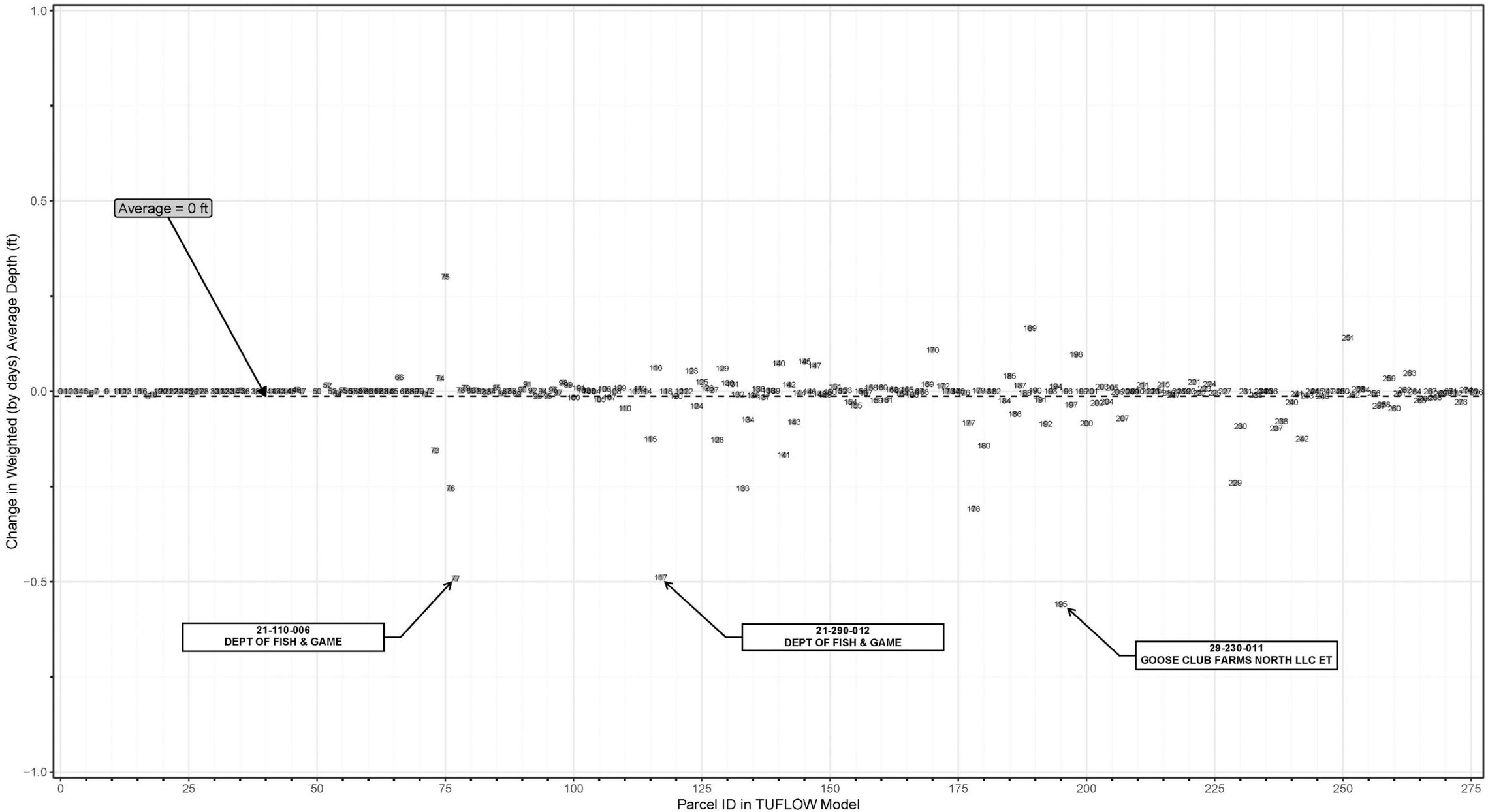


Figure 23

TUFLOW Model − Change in Average Depth by Parcel (Dry Days)
Tisdale and Sutter Bypass (Critical WYs), Project Conditions



Attachment F

Waterfowl Season Summary WYs 1997 - 2018

Owner	APN	Parcel ID	Parcel Area	No. of Additional Wet Days, by WY																					
				1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TARKE FARMS LP	13-070-035	0	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE FARMS LP	13-070-040	1	198	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE LIV TR	13-070-044	2	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE FARMS LP	13-070-045	3	113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE LIV TR	13-070-051	4	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE LIV TR	13-070-052	5	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE BROS ESTATE LLC	13-070-053	6	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE LIV TR ETAL	13-070-054	7	87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE LIV TR ETAL	13-070-056	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE LIV TR	13-080-008	9	126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE LIV TR ETAL	13-080-028	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE BROS ESTATE LLC	13-080-033	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE REV TR ETAL	13-080-043	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE FARMS LP	13-090-020	13	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANDERSON R & J PROPS LP	13-090-026	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DAVIS MARGARET S	13-090-122	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE REV TR ETAL	13-140-001	16	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE LIV TR	13-140-008	17	167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE LIV TR	13-140-010	18	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BRYANT ROBERT/ KATHRINE TR ETAL	13-140-040	19	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
BRYANT ROBERT/ KATHRINE TR ETAL	13-140-047	20	182	1	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
DUSTIN SHAWN D/ JANET N	13-140-050	21	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUSTIN SHAWN ETAL	13-140-050	22	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEYER ENTERPRISES LLC	13-140-061	23	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEYER ENTERPRISES LLC	13-140-083	24	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIAMPAOLI JENNIFER F ETAL	13-140-084	25	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIAMPAOLI JENNIFER F ETAL	13-140-084	26	255	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIAMPAOLI JENNIFER F ETAL	13-140-085	27	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEYER DONAL/ BETTY M TR ETAL	13-140-086	28	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEYER SURVIVOR'S TRUST	13-140-095	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HENSEN REV LIV '09 TR ETAL	13-150-001	30	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NALL REV I-V '03 TR ETAL	13-150-006	31	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NALL DAVID E ETAL	13-150-006	32	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE BROS ESTATE LLC	13-150-021	33	69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE BROS ESTATE LLC	13-150-022	34	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE BROS ESTATE LLC	13-150-023	35	179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST	13-150-026	36	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEPT OF WATER RESOURCES	13-150-034	37	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROBINSON DENNIS R/ MICHELLE L	13-150-043	38	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MERIDIAN WALNUT HULLING ASSOC	13-150-044	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MERIDIAN WALNUT HULLING ASSOC	13-150-046	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HENSEN REV LIV '09 TR ETAL	13-150-049	41	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HENSEN REV LIV '09 TR ETAL	13-150-050	42	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAYLOR REV LIV '18 TR ETAL	13-150-051	43	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K H KING FAM LP ETAL	13-150-053	44	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K H KING FAM LP ETAL	13-150-054	45	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE BROS ESTATE LLC	13-150-070	46	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TARKE BROS ESTATE LLC	13-150-074	47	40	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RHODES-STOCKTON BEAN CO-OP	13-150-077	48	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANDERSON SURVIVORS '00 TR ETAL	13-150-083	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAYLOR REV LIV '18 TR	13-150-085	50	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANDERSON R & J PROPS LP	13-150-091	51	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIAMPAOLI JENNIFER F ETAL	13-190-013	52	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
ROGERS FRANK A JR ETAL	13-190-014	53	81	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
GIAMPAOLI JENNIFER F ETAL	13-190-043	54	15	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
ROGERS FRANK A JR ETAL	13-340-001	55	135	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
O NEILL SEAN ETAL	13-340-003	56	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROGERS FRANK A JR ETAL	13-340-004	57	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
ROGERS FRANK A JR ETAL	13-340-005	58	135	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-006	59	54	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0
O NEILL SEAN ETAL	13-340-009	60	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-022	61	5	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	1	0
JAEGER WILLIAM L/ PATRICIA	13-340-025	62	109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL LAND CO	13-340-027	63	108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL LAND CO	13-340-028	64	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAUGHLIN PATRICK TR ETAL	13-340-032	65	80	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	13-340-033	66	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL LAND CO	13-340-034	67	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
FISH & WILDLIFE SERVICE	13-340-039	68	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	13-340-040	69	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-044	70	98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-045	71	89	0	0	0	0	0	2	0	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST	13-340-046	72	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAN/ SAN JOAQUIN DRAINAGE DIST	21-100-008	73	38	2	0	0	0	0	1	1	0	0	2	0	0	0	1	0	0	1	0	1	2	1	0
SAC/ SAN JOAQUIN DRAINAGE DIST	21-100-009	74	57	6	1	15	6	0	20	10	21	11	5	0	10	0	9	11	1	6	0	8	9	15	0
SAC/ SAN JOAQUIN DRAINAGE DIST	21-100-012	75	25	2	1	2	2	0	0	3	0	0	2	0	2	0	0	3	0	0	0	2	1	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST	21-110-002	76	25	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
DEPT OF FISH & GAME	21-110-006	77	15	3	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-140-001	78	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-140-002	79	21	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-140-003	80	286	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
FISH & WILDLIFE SERVICE	21-140-005	81	40	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-140-008	82	58	1	0	1	4	0	2	2	2	0	3	0	2	0	3	3	0	2	0	0	2	3	0
FISH & WILDLIFE SERVICE	21-140-009	83	132	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-140-010	84	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-140-011	85	151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-140-013	86	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-140-014	87	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-140-015	88	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-180-001	89	54	5	0	6	3	0	4	1	3	1	5	0	2	0	0	1	0	1	0	1	1	4	0
FISH & WILDLIFE SERVICE	21-180-002	90	97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-180-003	91	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-180-004	92	149	0	0	6	0	0	5	0	2	1	0	0	0	0	0	1	0	0	0	0	0	1	0
FISH & WILDLIFE SERVICE	21-180-005	93	179	0	0	3	4	0	3	1	5	2	0	0	0	0	0	2	0	1	0	0	1	2	0
FISH & WILDLIFE SERVICE	21-180-006	94	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	0	0
FISH & WILDLIFE SERVICE	21-180-010	95	97	3	0	4	0	0	1	1	3	3	4	0	3	0	0	2	0	2	0	1	0	5	0
FISH & WILDLIFE SERVICE	21-180-011	96	97	1	0	4	1	0	4	2	2	5	0	0	4	0	0	2	0	2	0	0	2	5	0
FISH & WILDLIFE SERVICE	21-240-001	97	99	0	0	3	0	0	1	0	1	2	1	0	1	0	0	1	0	0	0	1	0	2	0
DEPT OF FISH & GAME	21-240-013	98	23	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
DEPT OF FISH & GAME	21-240-014	99	21	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
SAC/ SAN JOAQUIN DRAINAGE DIST	21-240-015	100	18	5	0	9	3	0	8	4	4	4	5	0	1	0	2	4	0	2	0	2	5	10	0
CREPS REV '05 TR ETAL	21-240-016	101	426	0	0	3	1	0	1	0	0	0	0	0	11	0	0	4	0	1	0	1	0	3	0
FISH & WILDLIFE SERVICE	21-240-023	102	101	0	0	3	4	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	1	0	0
CREPS REV '05 TR ETAL	21-240-025	103	11	4	0	4	1	0	5	1	1	3	4	0	3	0	1	2	0	2	0	0	1	5	0
CREPS REV '05 TR ETAL	21-240-028	104	19	0	0	1	0	0	0	0	2	0	1	0	3	0	0	3	0	0	0	0	1	0	0
CREPS REV '05 TR ETAL	21-240-029	105	91	2	0	9	0	0	2	3	4	2	0	0	2	0	0	2	0	0	0	0	2	6	0
CREPS REV '05 TR ETAL	21-240-030	106	8	2	0	4	1	0	2	1	2	2	4	0	1	0	1	3	0	2	0	0	1	5	0
CREPS REV '05 TR ETAL	21-240-031	107	57	0	0	9	0	0	3	2	4	2	1	0	2	0	0	3	0	1	0	1	1	2	0
CREPS REV '05 TR ETAL	21-240-032	108	5	0	0	1	0	0	1	0	2	0	1	0	0	0	0	3	0	0	0	1	0	0	0
CREPS REV '05 TR ETAL	21-240-033	109	13	0	0	1	0	0	1	0	2	0	1	0	0	0	0	2	0	1	0	1	0	0	0
DEPT OF FISH & GAME	21-250-009	110	44	0	3	8	0	0	5	2	7	1	1	0	2	0	0	3	2	1	0	3	4	0	0

Parcel ID	Reduction in Dry Days (%), by WY																					
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
20	1.3	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	1.3	0.0	0.9	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0
58	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	1.1	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
68	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.8	0.0	1.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
72	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73	2.3	0.0	0.0	0.0	0.0	0.8	0.9	0.0	0.0	1.9	0.0	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.8	1.5	1.0	0.0
74	7.6	1.0	13.8	4.8	0.0	17.1	10.6	18.3	8.9	5.7	0.0	7.7	0.0	7.3	9.2	0.7	4.9	0.0	6.6	7.2	16.0	0.0
75	2.4	0.9	1.7	1.5	0.0	0.0	2.9	0.0	0.0	2.1	0.0	1.5	0.0	0.0	2.3	0.0	0.0	0.0	1.6	0.8	0.0	0.0
76	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.8	0.0	0.0	0.0
77	3.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82	1.2	0.0	0.8	3.0	0.0	1.7	2.1	1.7	0.0	3.2	0.0	1.5	0.0	2.5	2.4	0.0	1.6	0.0	0.0	1.6	3.2	0.0
83	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89	6.3	0.0	5.3	2.4	0.0	3.6	1.2	2.7	0.9	5.6	0.0	1.6	0.0	0.0	0.8	0.0	0.9	0.0	0.8	0.8	4.5	0.0
90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
91	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92	0.0	0.0	6.0	0.0	0.0	5.4	0.0	2.2	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
93	0.0	0.0	2.9	3.2	0.0	3.1	1.3	5.2	1.8	0.0	0.0	0.0	0.0	0.0	1.8	0.0	1.0	0.0	0.0	0.9	2.5	0.0
94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.9	0.0	0.0	0.0	0.0	0.0
95	3.9	0.0	3.6	0.0	0.0	1.0	1.2	2.8	2.6	4.5	0.0	2.4	0.0	0.0	1.7	0.0	1.7	0.0	0.9	0.0	5.7	0.0
96	1.3	0.0	3.6	0.8	0.0	3.8	2.4	1.9	4.2	0.0	0.0	3.3	0.0	0.0	1.7	0.0	1.8	0.0	0.0	1.7	5.7	0.0
97	0.0	0.0	3.3	0.0	0.0	1.2	0.0	1.2	2.0	1.2	0.0	0.8	0.0	0.0	0.9	0.0	0.0	0.0	0.9	0.0	2.6	0.0
98	1.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
99	1.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0
100	6.3	0.0	8.0	2.4	0.0	7.0	4.4	3.6	3.3	5.6	0.0	0.8	0.0	1.7	3.3	0.0	1.7	0.0	1.7	4.0	10.6	0.0
101	0.0	0.0	3.8	0.8	0.0	1.4	0.0	0.0	0.0	0.0	0.0	9.3	0.0	0.0	4.1	0.0	1.2	0.0	1.1	0.0	3.8	0.0
102	0.0	0.0	3.9	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.0	0.0	2.4	0.0	0.0	0.9	0.0	0.0
103	5.1	0.0	3.6	0.8	0.0	4.6	1.1	0.9	2.6	4.5	0.0	2.4	0.0	0.9	1.7	0.0	1.7	0.0	0.0	0.8	5.5	0.0
104	0.0	0.0	1.2	0.0	0.0	0.0	0.0	2.4	0.0	1.2	0.0	2.9	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.9	0.0	0.0
105	2.6	0.0	8.6	0.0	0.0	2.0	3.5	3.9	1.8	0.0	0.0	1.7	0.0	0.0	1.7	0.0	0.0	0.0	0.0	1.7	7.1	0.0
106	2.6	0.0	3.7	0.8	0.0	1.9	1.2	1.9	1.8	4.5	0.0	0.8	0.0	0.9	2.5	0.0	1.8	0.0	0.0	0.8	5.7	0.0
107	0.0	0.0	9.1	0.0	0.0	3.1	2.4	4.2	1.9	1.2	0.0	1.7	0.0	0.0	2.6	0.0	1.0	0.0	0.9	0.9	2.6	0.0
108	0.0	0.0	1.3	0.0	0.0	1.3	0.0	2.5	0.0	1.2	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	1.0	0.0	0.0	0.0
109	0.0	0.0	1.2	0.0	0.0	1.3	0.0	2.4	0.0	1.2	0.0	0.0	0.0	0.0	1.9	0.0	1.1	0.0	1.0	0.0	0.0	0.0
110	0.0	2.9	7.8	0.0	0.0	5.0	2.4	6.9	0.9	1.2	0.0	1.7	0.0	0.0	2.6	1.4	0.9	0.0	2.6	3.4	0.0	0.0

Parcel ID	Avg. No. of Additional Wet Days	Avg. Reduction in Dry Days (%)	Avg. No. of Additional Wet Days					Avg. Reduction in Dry Days (%)				
			Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical
0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
1	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
2	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
3	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
4	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
5	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
6	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
7	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
8	0	-	0	0	0	0	0	-	-	-	-	-
9	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
10	0	-	0	0	0	0	0	-	-	-	-	-
11	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
12	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
13	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
14	0	-	0	0	0	0	0	-	-	-	-	-
15	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
16	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
17	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
18	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
19	0	0.0	0	0	0	0	0	0.00	0.00	0.15	0.00	0.00
20	0	0.2	1	0	0	0	0	0.75	0.00	0.00	0.00	0.00
21	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
22	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
23	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
24	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
25	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
26	0	0.1	0	0	0	0	0	0.32	0.00	0.00	0.00	0.00
27	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
28	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
29	0	-	0	0	0	0	0	-	-	-	-	-
30	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
31	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
32	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
33	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
34	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
35	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
36	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
37	0	-	0	0	0	0	0	-	-	-	-	-
38	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
39	0	-	0	0	0	0	0	-	-	-	-	-
40	0	-	0	0	0	0	0	-	-	-	-	-
41	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
42	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
43	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
44	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
45	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
46	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
47	0	0.0	0	0	0	0	0	0.00	0.00	0.16	0.00	0.00
48	0	-	0	0	0	0	0	-	-	-	-	-
49	0	-	0	0	0	0	0	-	-	-	-	-
50	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
51	0	-	0	0	0	0	0	-	-	-	-	-
52	0	0.0	0	0	0	0	0	0.00	0.00	0.17	0.00	0.00
53	0	0.1	0	0	0	0	0	0.19	0.29	0.00	0.00	0.00
54	0	0.1	0	0	0	0	0	0.17	0.00	0.00	0.00	0.29
55	0	0.2	0	0	0	0	0	0.37	0.40	0.00	0.00	0.00
56	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
57	0	0.1	0	0	0	0	0	0.41	0.00	0.00	0.00	0.00
58	0	0.0	0	0	0	0	0	0.18	0.00	0.00	0.00	0.00
59	0	0.2	0	1	0	0	0	0.43	0.65	0.00	0.00	0.00
60	0	0.0	0	0	0	0	0	0.15	0.00	0.00	0.00	0.00
61	0	0.2	1	0	0	0	0	0.49	0.00	0.00	0.00	0.26
62	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
63	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
64	0	0.1	0	0	0	0	0	0.20	0.00	0.00	0.00	0.00
65	0	0.0	0	0	0	0	0	0.00	0.30	0.00	0.00	0.00
66	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
67	0	0.0	0	0	0	0	0	0.00	0.00	0.15	0.00	0.00
68	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
69	0	0.0	0	0	0	0	0	0.00	0.00	0.15	0.00	0.00
70	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
71	0	0.2	0	0	0	0	1	0.17	0.00	0.17	0.33	0.52
72	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
73	1	0.5	1	0	1	0	0	0.87	0.30	0.45	0.31	0.26
74	7	6.7	9	9	8	5	6	8.85	8.10	6.70	4.40	4.77
75	1	0.8	2	2	0	0	1	1.57	1.48	0.16	0.00	1.03
76	0	0.1	0	0	0	0	0	0.12	0.24	0.00	0.00	0.26
77	0	0.3	1	1	0	0	0	0.66	0.53	0.00	0.15	0.00
78	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
79	0	0.0	0	0	0	0	0	0.00	0.00	0.16	0.00	0.00
80	0	0.0	0	0	0	0	0	0.00	0.00	0.16	0.00	0.00
81	0	0.0	0	0	0	0	0	0.00	0.00	0.17	0.00	0.00
82	1	1.2	2	2	1	1	1	1.80	1.70	1.15	0.66	0.51
83	0	0.1	1	0	0	0	0	0.42	0.00	0.00	0.00	0.00
84	0	0.0	0	0	0	0	0	0.12	0.00	0.00	0.00	0.00
85	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
86	0	0.0	0	0	0	0	0	0.14	0.00	0.00	0.00	0.00
87	0	0.1	0	0	0	0	0	0.25	0.00	0.00	0.00	0.00
88	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
89	2	1.7	4	2	1	1	1	3.75	1.49	0.71	0.90	0.81
90	0	0.2	1	0	0	0	0	0.69	0.00	0.00	0.00	0.00
91	0	0.0	0	0	0	0	0	0.13	0.00	0.00	0.00	0.00
92	1	0.8	1	0	0	1	0	1.37	0.32	0.43	1.09	0.00
93	1	1.1	1	2	1	1	0	1.20	2.07	1.22	0.83	0.00
94	0	0.2	1	0	0	0	0	0.49	0.00	0.00	0.18	0.00
95	1	1.5	3	1	1	1	1	3.23	1.25	0.56	0.54	1.09
96	2	1.5	2	3	1	1	1	2.05	2.48	0.72	1.13	1.10
97	1	0.6	1	1	0	0	1	1.33	0.66	0.24	0.25	0.59
98	0	0.1	0	0	0	0	0	0.32	0.00	0.00	0.14	0.00
99	0	0.2	1	0	0	0	0	0.63	0.00	0.00	0.00	0.00
100	3	2.9	6	4	2	2	1	5.64	3.40	1.87	1.74	0.83
101	1	1.2	2	0	0	0	4	1.96	0.28	0.00	0.53	3.47
102	1	0.6	1	1	0	0	0	0.83	1.08	0.18	0.48	0.28
103	2	1.6	3	2	1	1	1	3.38	1.51	0.52	1.26	0.80
104	1	0.5	1	0	1	0	1	0.86	0.00	0.65	0.00	0.95
105	2	1.6	3	2	1	0	1	3.35	1.78	1.12	0.40	0.56
106	1	1.4	3	1	1	1	0	3.18	1.25	0.72	0.74	0.28
107	1	1.4	3	1	1	1	1	2.58	1.44	1.01	0.82	0.88
108	0	0.5	1	0	0	0	0	0.89	0.00	0.51	0.26	0.35
109	0	0.5	1	0	0	0	0	0.72	0.00	0.49	0.48	0.33
110	2	1.8	3	1	3	1	2	2.41	1.08	2.33	1.17	1.43

Waterfowl Season Summary WYs 1997 - 2018

Owner	APN	Parcel ID	Parcel Area	No. of Additional Wet Days, by WY																						Reduction in Dry Days (%), by WY																						Avg. No. of Additional Wet Days	Avg. Reduction in Dry Days (%)	Avg. No. of Additional Wet Days					Avg. Reduction in Dry Days (%)				
				1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018			Wet	Above Normal	Below Normal	Dry	Critical	Wet	Above Normal	Below Normal	Dry	Critical
SAC/ SAN JOAQUIN DRAINAGE DIST	21-250-010	111	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	0	0	0	0	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	21-260-003	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
DEPT OF FISH & GAME	21-260-004	113	42	2	2	14	0	0	6	3	10	2	1	0	5	0	1	5	2	0	0	3	5	5	0	2.7	1.9	13.0	0.0	0.0	5.7	3.5	9.3	1.8	1.2	0.0	4.0	0.0	0.9	4.3	1.4	0.0	0.0	2.6	4.1	5.9	0.0	3	2.8	5	2	4	1	3	4.81	1.75	3.16	1.14	2.21
SAC/ SAN JOAQUIN DRAINAGE DIST	21-290-001	114	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
DEPT OF FISH & GAME	21-290-002	115	46	5	1	16	4	0	16	8	19	8	5	0	8	0	7	10	2	2	0	6	8	12	0	6.4	1.0	14.5	3.3	0.0	13.9	8.8	16.8	6.6	5.7	0.0	6.3	0.0	5.8	8.3	1.4	1.7	0.0	5.0	6.5	13.0	0.0	6	5.7	8	7	7	4	5	8.15	6.22	6.10	3.12	3.76
DEPT OF FISH & GAME	21-290-003	116	33	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0.9	0.9	0.7	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0	0.2	1	0	0	0	0	0.70	0.26	0.00	0.00	0.00
DEPT OF FISH & GAME	21-290-012	117	33	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	2	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	1.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	1.6	0.8	0.0	0.0	0	0.2	0	0	0	0	1	0.17	0.31	0.31	0.00	0.52
DEPT OF FISH & GAME	21-300-001	118	34	3	3	9	0	0	4	2	9	2	0	0	4	0	1	3	1	1	0	3	5	5	0	3.9	2.8	8.3	0.0	0.0	3.8	2.3	8.3	1.8	0.0	0.0	3.2	0.0	0.9	2.6	0.7	0.9	0.0	2.6	4.1	5.8	0.0	3	2.4	4	1	3	1	2	3.91	1.36	2.81	0.93	1.93
SUTTER MUTUAL WATER CO	21-310-021	119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	0	0	0	0	-	-	-	-	-
CREPS REV '05 TR ET AL	24-070-001	120	150	0	0	3	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0.0	0.0	4.2	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0	0.5	1	0	0	0	0	1.24	0.00	0.00	0.29	0.37
SAC/ SAN JOAQUIN DRAINAGE DIST	24-070-009	121	9	0	1	6	0	0	2	1	0	0	0	0	0	0	0	0	2	0	0	3	1	0	0	0.0	1.1	6.0	0.0	0.0	2.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	2.7	0.8	0.0	0.0	1	0.7	1	0	1	0	1	1.19	0.40	0.46	0.44	0.91
DEPT OF FISH & GAME	24-080-006	122	7	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	2.2	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	1.0	0.0	0	0.2	1	0	0	0	1	0.65	0.00	0.00	0.00	0.51
CREPS REV '05 TR ET AL	24-080-007	123	237	0	1	4	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0.0	0.9	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0	0.5	1	0	0	0	0	1.75	0.00	0.18	0.00	0.00
DEPT OF FISH & GAME	24-080-010	124	38	0	0	1	0	0	0	1	2	2	1	0	0	0	1	3	0	1	0	2	0	1	0	0.0	0.0	0.8	0.0	0.0	0.0	1.0	1.6	1.5	1.0	0.0	0.0	0.0	0.8	2.3	0.0	0.8	0.0	1.6	0.0	1.0	0.0	1	0.6	1	1	1	0	1	0.86	0.83	0.48	0.16	0.52
DEPT OF FISH & GAME	24-110-007	125	23	2	0	9	1	0	3	3	6	2	2	0	3	0	0	2	0	1	0	0	3	7	0	2.6	0.0	8.3	0.8	0.0	2.8	3.4	5.5	1.7	2.3	0.0	2.4	0.0	0.0	1.7	0.0	0.9	0.0	0.0	2.5	8.0	0.0	2	2.0	4	2	2	1	1	3.81	2.01	1.59	0.74	0.80
TJ HOLDINGS LP	24-120-001	126	150	0	1	2	0	0	0	2	0	1	0	0	0	0	0	0	3	0	0	5	2	0	0	0.0	1.1	2.1	0.0	0.0	0.0	2.5	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	4.6	1.7	0.0	0.0	1	0.7	1	1	1	0	2	0.54	1.14	0.78	0.00	1.53
TJ HOLDINGS LP	24-120-002	127	72	1	1	0	0	0	0	0	4	-2	0	1	1	0	0	0	0	0	0	0	3	0	0	1.4	1.4	0.0	0.0	0.0	0.0	0.0	5.2	-2.3	0.0	0.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0	0.5	0	-1	1	0	0	0.45	-0.77	1.60	0.16	0.31
DEPT OF FISH & GAME	24-120-003	128	31	2	2	10	1	0	5	2	8	1	0	0	4	0	0	2	1	0	0	0	2	4	0	2.6	1.9	9.2	0.8	0.0	4.7	2.3	7.4	0.9	0.0	0.0	3.2	0.0	0.0	1.7	0.7	0.0	0.0	0.0	1.7	4.7	0.0	2	1.9	3	1	2	1	1	3.35	1.35	1.96	0.94	1.08
SAC/ SAN JOAQUIN DRAINAGE DIST	24-120-010	129	32	2	1	10	1	0	5	2	7	1	0	0	4	0	0	2	1	1	0	0	2	4	0	2.6	0.9	9.2	0.8	0.0	4.7	2.3	6.5	0.9	0.0	0.0	3.2	0.0	0.0	1.7	0.7	0.9	0.0	0.0	1.7	4.7	0.0	2	1.9	3	1	2	1	1	3.19	1.35	1.78	1.12	1.08
SAC/ SAN JOAQUIN DRAINAGE DIST	24-120-013	130	2	4	0	3	4	0	7	3	5	3	5	0	0	0	2	3	0	2	0	2	2	3	0	4.9	0.0	2.6	3.2	0.0	5.9	3.3	4.3	2.4	5.4	0.0	0.0	0.0	1.7	2.5	0.0	1.7	0.0	1.6	1.6	3.2	0.0	2	2.0	3	3	2	2	1	3.11	2.96	1.52	1.52	0.55
TJ HOLDINGS LP	24-120-017	131	276	0	1	10	0	0	3	2	5	3	1	0	7	0	0	2	0	1	0	0	2	2	0	0.0	0.9	10.0	0.0	0.0	3.2	2.4	5.3	2.8	1.2	0.0	5.9	0.0	0.0	1.8	0.0	1.0	0.0	0.0	1.7	2.6	0.0	2	1.8	3	2	1	1	2	2.75	1.74	1.39	0.82	1.98
SAC/ SAN JOAQUIN DRAINAGE DIST	24-120-018	132	23	1	2	4	0	0	2	1	1	1	0	0	0	0	0	1	1	1	0	4	4	1	0	1.4	2.0	4.1	0.0	0.0	2.2	1.2	1.1	0.9	0.0	0.0	0.0	0.0	0.0	1.0	0.7	1.0	0.0	3.5	3.4	1.3	0.0	1	1.1	2	1	1	1	1	1.62	0.70	1.04	0.62	1.16
DEPT OF FISH & GAME	24-130-002	133	71	2	1	10	0	0	3	2	7	3	0	0	3	0	1	2	0	1	0	0	2	3	0	2.6	0.9	9.1	0.0	0.0	2.8	2.3	6.5	2.6	0.0	0.0	2.4	0.0	0.9	1.7	0.0	0.9	0.0	0.0	1.6	3.5	0.0	2	1.7	3	2	2	1	1	2.98	1.63	1.80	0.74	0.81
TJ HOLDINGS LP	24-130-018	134	3	1	0	3	5	0	6	3	2	4	2	0	3	0	4	2	0	1	0	1	1	1	0	1.2	0.0	2.5	3.7	0.0	4.8	3.1	1.7	3.1	2.1	0.0	2.3	0.0	3.2	1.6	0.0	0.8	0.0	0.8	0.8	1.0	0.0	2	1.5	2	4	1	1	1	1.42	3.33	1.14	1.13	1.03
SAC/ SAN JOAQUIN DRAINAGE DIST	24-130-019	135	15	0	2	0	0	0	0	1	4	1	0	2	1	0	0	0	0	0	0	1	2	0	2	0.0	2.4	0.0	0.0	0.0	0.0	1.2	4.5	1.0	0.0	1.5	0.9	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.8	0.0	1.5	1	0.7	0	1	2	0	1	0.40	0.73	1.56	0.30	0.71
TJ HOLDINGS LP	24-130-023	136	185	0	0	8	0	0	1	0	0	0	0	0	19	0	0	2	0	0	0	1	0	1	0	0.0	0.0	9.8	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	16.1	0.0	0.0	2.0	0.0	0.0	0.0	1.0	0.0	1.3	0.0	1	1.4	2	0	0	0	7	2.18	0.00	0.00	0.27	5.71
TJ HOLDINGS LP	24-130-029	137	155	0	0	7	0	0	1	0	0	0	1	0	11	0	0	3	0	0	0	1	1	0	0	0.0	0.0	8.6	0.0	0.0	1.4	0.0	0.0	0.0	1.2	0.0	9.9	0.0	0.0	3.0	0.0	0.0	0.0	1.0	0.9	0.0	0.0	1	1.2	2	0	0	0	4	2.14	0.00	0.18	0.27	3.65
DE WIT FARMS INC	24-130-030	138	57	0	0	6	0	0	1	0	0	0	0	0	20	0	0	3	0	0	0	0	0	1	0	0.0	0.0	7.7	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	17.1	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1	1.4	2	0	0	0	7	2.04	0.00	0.00	0.29	5.70
SAC/ SAN JOAQUIN DRAINAGE DIST	24-130-031	139	23	0	7	5	0	0	6	2	2	2	0	0	1	0	0	3	5	0	0	6	6	1	0	0.0	6.5	5.4	0.0	0.0	6.5	2.4	2.2	1.9	0.0	0.0	0.9	0.0	0.0	2.7	3.6	0.0	0.0	5.4	5.2	1.3	0.0	2	2.0	3	1	3	1	2	2.67	1.45	2.21	1.30	2.09
DEPT OF FISH & GAME	24-180-006	140	12	2	0	1	8	0	5	2	3	3	2	0	2	0	3	2	0	0	0	0	2	3	0	2.5	0.0	0.9	6.1	0.0	4.1	2.2	2.5	2.4	2.2	0.0	1.6	0.0	2.5	1.6	0.0	0.0	0.0	0.0	1.6	3.2	0.0	2	1.5	2	4	2	1	1	1.71	3.53	1.32	0.83	0.52
DE WIT FARMS LLC	24-180-013	141	3	4	0	3	3	0	5	3	5	1	6	0	1	0	1	3	0	0	0	2	2	2	0	5.0	0.0	2.6	2.4	0.0	4.3	3.3	4.3	0.8	6.6	0.0	0.8	0.0	0.8	2.5	0.0	0.0	0.0	1.6	1.6	2.2	0.0	2	1.8	3	2	2	1	1	3.15	2.18	1.36	0.87	0.81
SAC/ SAN JOAQUIN DRAINAGE DIST	24-180-014	142	5	2	0	2	4	0	7	3	5	3	5	0	1	0	1	3	0	2	0	1	1	2	0	2.6	0.0	1.8	3.2	0.0	6.0	3.4	4.3	2.5	5.5	0.0	0.8	0.0	0.8	2.5	0.0	1.7	0.0	0.8	0.8	2.2	0.0	2	1.8	2	3	1	2	1	2.42	3.02	1.20	1.54	0.54
DEPT OF FISH & GAME	25-130-016	143	43	0	1	10	0	0	5	2	8	2	0	0	3	0	0	3	0	0	0	1	1	3	0	0.0	0.9	9.3	0.0	0.0	4.7	2.3	7.4	1.7	0.0	0.0	2.4	0.0	0.0	2.6	0.0	0.0	0.0	0.8	0.8	3.5	0.0	2	1.7	3	1	2	1	1	2.71	1.35	1.65	0.94	1.09
DNH FARMS GP	25-130-019	144	239	0	0	1	0	0	1	0	10	12	0	0	0	0	0	3	0	0	0	1	0	0	0	0.0	0.0	1.1	0.0	0.0	1.3	0.0	10.8	11.5	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1	1.3	1	4	2	0	0	0.66	3.85	2.15	0.25	0.32
SUTTER BASIN CORP LTD	25-130-020	145	8	0	1	9	0	0	5	2	9	2	1	0	3	0	0	2	0	0	0	1	1	3	0	0.0	0.9	8.3	0.0	0.0	4.7	2.3	8.3	1.7	1.2	0.0	2.4	0.0	0.0	1.7	0.0	0.0	0.0	0.8	0.8	3.5	0.0	2	1.7	3	1	2	1	1	2.62	1.35	1.82	0.94	1.09
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-029	146	42	0	0	6	0	0	1	1	1	1	0	0	0	0	0	0	1	0	0	3	2	0	0	0.0	0.0	6.0	0.0	0.0	1.1	1.2	1.1	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	2.6	1.7	0.0	0.0	1	0.7	1	1	1	0	1	1.00	0.70	0.70	0.22	0.87
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-030	147	8	0	1	9	1	0	2	1	7	1	0	1	6	0	0	2	1	2	0	2	2	2	0	0.0	0.9	8.5	0.8	0.0	2.0	1.2	6.7	0.9	0.0	0.7	4.8	0.0	0.0	1.7	0.7	1.8	0.0	1.7	1.7	2.4	0.0	2	1.7	2	1	2	1	3	2.27	0.96	1.81	0.89	2.18
DNH FARMS GP	25-130-035	148	172	0	0	7	0	0	1	0	0	0	0	0	17	0	0	3	0	0	0	0	1	1	0	0.0	0.0	8.6	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	14.9	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.9	1.3	0.0	1	1.4	2	0	0	0	6	2.17	0.00	0.18	0.28	4.97
DNH FARMS GP	25-130-036	149	25	0	0	9	0	0	1	0	2	2	1	0	13	0	0	2	0	1	0	0	1	2	0	0.0	0.0	10.0	0.0	0.0	1.3	0.0	2.4	2.1	1.2	0.0	10.8	0.0	0.0	1.9	0.0	1.1	0.0	0.0	0.9	2.6	0.0	2	1.6	2	1	1	0	4	2.61	0.71	0.65	0.46	3.61
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-045	150	59	0	1	9	0	0	3	2	8	1	0	0	4	0	0	1	1	1	0	2	2	1	0	0.0	0.9	8.6	0.0	0.0	2.9	2.3	7.7	0.9	0.0	0.0	3.3	0.0	0.0	0.9	0.7	0.9	0.0	1.7	1.7	1.2	0.0	2	1.5	2	1	2	1	2	1.94	1.07	2.02	0.77	1.68
SAC/ SAN JOAQUIN DRAINAGE DIST	25-130-047	151	40	0	1	0	0	0	0	0	5	-3	-1	2	0	0	0	1	0	0	0	0	4	0	1	0.0	1.4	0.0	0.0	0.0	0.0	0.0	6.3	-3.3	-1.3	1.6	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	3.7	0.0	0.8	0	0.5	0	-1	2	0	0	0.22	-1.11	2.17	0.31	0.00
DE WIT FARMS LLC	25-130-048	152	25	0	0	9	0	0	0	0	1	0	1	0	11	0	0	3	0	0	0	0	1	0	0	0.0	0.0	11.5	0.0	0.0	0.0	0.0	1.3	0.0	1.2	0.0	9.9	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.9	0.0	0.0	1	1.3	2	0	0	0	4	2.66	0.00	0.43	0.00	3.30
DE WIT FARMS LLC	25-130-049	153	125	0	0	8	0	0	1	0	0	0	1	0	13	0	0	2	0	0	0	0	1	0	0	0.0	0.0	10.1	0.0	0.0	1.4	0.0	0.0	0.0	1.2	0.0	11.6	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.9	0.0	0.0	1	1.2	2	0	0	0	4	2.24	0.00	0.18	0.29	3.87
SUTTER BASIN CORP LTD	25-200-003	154	6	0	1	11	0	0	5	2	6	2	0	0	5	0	0	1	0	0	0	2	2	3	0	0.0	0.9	10.2	0.0	0.0	4.7	2.3	5.7	1.7	0.0	0.0	4.0	0.0	0.0	0.9	0.0	0.0	0.0	1.7	1.7	3.6	0.0	2	1.7	3	1	2	1	2	2.59	1.35	1.46	0.94	1.90
SUTTER BASIN CORP LTD	25-200-008	155	103	0	1	9	1	0	3	2	7	1	0	0	2	0	0	1	1	2	0	1	1	1	0	0.0	0.9	8.7	0.8	0.0	2.9	2.3	6.8	0.9	0.0	0.0	1.7	0.0	0.0	0.9	0.7	1.8	0.0	0.9	0.8	1.2	0.0	2	1.4	2	1	2	1	1	1.95	1.35	1.67	0.95	0.85
DNH FARMS GP	25-200-026	156	1	0	3	6	0	0	4	2	2	1	0	0	0	0	0	4	2	0	0	5	4	0	0	0.0	2.9	6.1	0.0	0.0	4.0	2.4	2.1	0.9	0.0	0.0	0.0	0.0	0.0	3.6	1.4	0.0	0.0	4.3	3.4	0.0	0.0	2	1.4	2	1	2	1	2	2.10	1.09	1.37	0.81	1.44
DNH FARMS GP	25-200-027	157	15	0	0	2	0	0	2	0	1	2	0	0	0	0	0	3	0	0	0	0	0	3	0	0.0	0.0	2.2	0.0	0.0	2.4	0.0	1.2	2.1	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	3.8	0.0	1	0.7	1	1	0	0	0	1.46	0.69	0.23	0.49	0.00
DNH FARMS GP	25-200-030	158	127	0	0	2	0	0	2	0	0	0	0	0	6	0	0	3	0	1	0	1	0	2	0	0.0	0.0	2.4	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	3.0	0.0	1.2	0.0	1.1	0.0	2.6	0.0	1	0.8	1	0	0	1	2	1.33	0.00	0.00	0.78	2.09
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-031	159	54	0	3	-2	0	0	0	0	9	-4	0	3	0	0	0	0	0	0	0	1	4	0	1	0.0	3.9	-2.4	0.0	0.0	0.0	0.0	10.5	-4.4	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	3.6	0.0	0.8	1	0.7	0	-1	3	1	0	0.25	-1.47	2.97	0.46	0.42
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-032	160	42	0	2	8	1	0	3	1	6	1	0	0	1	0	0	3	1	0	0	3	2	2	0	0.0	1.9	7.9	0.8	0.0	3.0	1.2	5.9	0.9	0.0	0.0	0.9	0.0	0.0	2.7	0.7	0.0	0.0	2.6	1.7	2.5	0.0	2	1.5	3	1	2	1	1	2.49	0.97	1.66	0.59	1.14
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-038	161	18	0	1	10	0	0	2	1	7	1	0	0	6	0	0	2	0	0	0	1	2	3	0	0.0	0.9	9.3	0.0	0.0	2.0	1.2	6.7	0.9	0.0	0.0	4.8	0.0	0.0	1.7	0.0	0.0	0.0	0.8	1.7	3.6	0.0	2	1.5	3	1	2	0	2	2.61	0.68	1.66	0.39	1.90
SAC/ SAN JOAQUIN DRAINAGE DIST	25-200-039	162	7	0	0	3	0	0	1	0	0	1	0	0	0	0	0	-1	1	1	0	5	4	0	0	0.0	0.0	3.1	0.0	0.0	1.1	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	-1.0	0.7	1.1	0.0	4.3	3.4	0.0	0.0	1	0.6	0	0	1	0	2	0.35	0.31	0.83	0.45	1.45
PERRY FAM REV '03 TR	25-200-042	163	305	0	0	2	1	0	1	0	10	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0.0	0.0	2.5	0.8	0.0	1.4	0.0	11.2	3.2	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1	1.0	1	1	2	0	0	0.93	1.33	2.25	0.28	0.00
NORDIC INDUSTRIES INC/ ET AL	25-200-043	164	408	0	0	2	1	0	2	0	3	0	0	0	1	0	0	3	0	1	0	1	0	0	0	0.0	0.0	2.3	0.8	0.0	2.5	0.0	3.2	0.0	0.0	0.0	0.8	0.0	0.0	2.8	0.0	1.1	0.0	1.0	0.0	0.0	0.0	1	0.7	1	0	1	1	1	0.85	0.27	0.63	0.71	0.59
NORDIC INDUSTRIES INC/ ET AL	25-210-007	165	56	2	0	2	9	0	5	2	3	4	2	0	2	0	2	1	0	2	0	0	1	4	0	2.5	0.0	1.7	6.7	0.0	4.1	2.1	2.5	3.1	2.2	0.0	1.5	0.0	1.6	0.8	0.0	1.7	0.0	0.0	0.8	4.2	0.0	2	1.6	2	5	1	1	1	1.90	4.00	0.99	1.15	0.51
SAC/ SAN JOAQUIN DRAINAGE DIST	25-210-009	166	12	3	0	3	3	0	5	3	5	2	6	0	1	0	2	3	0	0	0	2	2	3	0	3.8	0.0	2.7	2.4	0.0	4.3	3.3	4.3	1.7	6.6	0.0	0.8	0.0	1.7	2.5	0.0	0.0	0.0	1.6	1.6	3.2	0.0	2	1.8	3	3	2	1	1	3.13	2.46	1.53	0.87	0.81
ODYSSEUS FARMS PTN	25-270-007	167	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GARWOOD RANCH INC	25-270-011	168	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	25-270-012	169	11	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.1	0	0	0	0	0	0.18	0.00	0.29	0.00	0.00
DEPT OF FISH & GAME	25-270-013	170	130	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.15	0.00	0.00	0.00	0.00
DEPT OF FISH & GAME	25-280-009	171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	0	0	0	0	-	-	-	-	-
DEPT OF FISH & GAME	25-290-006	172	307	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
ODYSSEUS FARMS PTN	25-290-008	173	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	25-300-002	174	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
DEPT OF FISH & GAME	25-300-003	175	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-003	176	82	0	0	9	0	0	4	2	6	1	0	0	2	0	0	2	0	0	0	1	1	1	0	0.0	0.0	8.5	0.0	0.0	3.8	2.3	5.6	0.9	0.0	0.0	1.6	0.0	0.0	1.7	0.0	0.0	0.0	0.8	0.8	1.2	0.0	1	1.2	2	1	1	1	1	1.91	1.06	1.29	0.75	0.81
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-006	177	17	1	0	3	3	0	4	3	3	0	5	0	2	0	2	3	0	1	0	0	2	3	0	1.3	0.0	2.7	2.4	0.0	3.4	3.3	2.6	0.0	5.5	0.0	1.6	0.0	1.7	2.5	0.0	0.8	0.0	0.0	1.6	3.3	0.0	2	1.5	3	2	1	1	1	2.56	1.92	1.17	0.86	0.52
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-007	178	17	0	0	5	1	0	1	2	6	3	1	0	0	0	1	2	0	0	0	0	1	4	0	0.0	0.0	4.6	0.8	0.0	0.9	2.3	5.4	2.5	1.2	0.0	0.0	0.0	0.9	1.7	0.0	0.0	0.0	0.0	0.8	4.6	0.0	1	1.2	2	2	2	0	0	2.02	1.89	1.42	0.19	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-008	179	13	0	0	9	0	0	5	2	7	2	0	0	1	0	0	1	0	0	0	0	1	1	0	0.0	0.0	8.3	0.0	0.0	4.7	2.3	6.5	1.7	0.0	0.0	0.8	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.8	1.2	0.0	1	1.2	2	1	2	1	0	1.73	1.35	1.46	0.94	0.27
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-009	180	34	0	0	0	0	0	0	0	1	0	0	0	0	0	2	1	0	1	0	0	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	1.6	0.8	0.0	0.8	0.0	0.0	0.0	1.0	0.0	0	0.2	0	0	1	0	0	0.29	0.00	0.47	0.16	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-010	181	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-012	182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-014	183	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	0	0	0	0	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-017	184	16	0	2	1	0	0	1	1	0	1	2	0	1	0	0	0	1	0	0	5	5	0	0	0.0	2.3	1.1	0.0	0.0	1.1	1.2	0.0	1.0	2.4	0.0	0.9	0.0	0.0	0.0	0.7	0.0	0.0	4.5	4.3	0.0	0.0	1	0.9	1	1	1	0	2	0.97	0.73	1.01	0.23	1.80
SAC/ SAN JOAQUIN DRAINAGE DIST	29-210-020	185	33	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.28	0.00	0.00	0.00
MONTNA A&G PROPERTIES LP	29-210-022	186	461	3	0	0	1	0	0	1	3	0	0	0	1	0	1	0	0	1	0	0	1	0	0	3.7	0.0	0.0	0.7	0.0	0.0	1.0	2.4	0.0	0.0	0.0	0.7	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	1	0.5	1	1	1	0	0	0.62	0.58	0.80	0.16	0.25
NORDIC INDUSTRIES INC/ ET AL	29-210-023	187	164	1	1	1	9	0	5	4	2	5	3	0	0	0	2	2	0	1	0	2	1	3	0	1.3	0.9	0.9	6.8	0.0	4.1	4.3	1.7	4.0	3.2	0.0	0.0	0.0	1.7	1.7	0.0	0.8	0.0	1.6	0.8	3.2	0.0	2	1.7	2	6	1	1	1	1.87	5.00	0.83	0.99	0.55
NORDIC INDUSTRIES INC/ ET AL	29-210-024	188	344	0	0	3	4	0	4	0	2	1	0	0	0	0	0	1	0	1	0	1	0	2	0	0.0	0.0	3.1	3.2	0.0	3.8	0.0	1.8	0.9	0.0	0.0	0.0	0.0	0.0	0.9	0.0	1.0	0.0	0.9	0.0	2.4	0.0	1	0.8	1	2	0	1	0	1.07	1.36	0.37	0.96	0.30
SUTTER BASIN CORP LTD	29-230-004	189	44	0	0	0	5	0	1	2	2	2	2	0	4	0	2	1	0	0	0	0	2	0	0	0.0	0.0	0.0	3.7	0.0	0.8	2.1	1.7	1.6	2.2	0.0	3.0	0.0	1.6	0.8	0.0	0.0	0.0	0.0	1.6	0.0	0.0	1	0.9	1	3	1	0	1	0.50	2.45	0.97	0.16	1.01
SUTTER BASIN CORP LTD	29-230-006	190	53	0	0	5	0	0	1	2	6	2	0	0	2	0	0	1	0	0	0	0	0	0	0	0.0	0.0	4.9	0.0	0.0	1.0	2.3	5.6	1.7	0.0	0.0	1.6	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1	0.8	1	1	1	0	1	0.96	1.35	1.12	0.19	0.53
GOOSE CLUB FARMS NORTH LLC ET	29-230-007	191	188	0	9	4	0	0	3	1	1	1	0	0	0	0	0	3	0	0	0	4	1	0	0	0.0	8.4	4.7	0.0	0.0	3.4	1.3	1.1	1.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	3.6	0.9	0.0	0.0	1	1.2	3	1	0	1	1	2.65	0.75	0.40	0.68	1.19
GOOSE CLUB FARMS NORTH LLC ET	29-230-008	192	607	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.15	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	29-230-009	193	1	0	0	0	0	0	1	0	2	2	0	0	2	0	1	0	0	1	0	1	1	0	0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	1.6	1.5	0.0	0.0	1.5	0.0	0.8	0.0	0.0	0.8	0.0	0.8	0.8	0.0	0.0	1	0.4	0	1	1	0	1	0.00	0.51	0.64	0.32	0.76
SAC/ SAN JOAQUIN DRAINAGE DIST	29-230-010	194	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GOOSE CLUB FARMS NORTH LLC ET	29-230-011	195	596	1	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1.2	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.2	0	0	0	0	0	0.20	0.00	0.31	0.31	0.00
GOOSE CLUB FARMS NORTH LLC ET	29-230-012	196	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	29-230-013	197	9	0	0	4	2	0	5	2	6	3	1	0	0	0	1	2	0	0	0	1	1	2	0	0.0	0.0	3.7	1.6	0.0	4.5	2.3	5.3	2.5	1.1	0.0	0.0	0.0	0.9	1.7	0.0	0.0	0.0	0.8	0.8	2.3	0.0	1	1.3	2	2	2	1	0	1.48	2.14	1.39	0.90	0.28
MONTNA A&G PROPERTIES LP	29-230-014	198	33	0	0	1	1	0	0	1	2	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0.0	0.0	0.8	0.7	0.0	0.0	1.0	1.6	0.8	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0	0.3	0	1	1	0	0	0.14	0.84	0.48	0.16	0.25
SUTTER BASIN CORP LTD	29-250-001	199	53	0	1	0	0	-1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	1.4	0.0	0.0	-0.8	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.1	0	1	0	0	0	0.24	0.78	0.00	-0.16	0.00
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	200	643	0	0	5	0	0	2	2	8	2	0	0	7	0	0	1	0	0	0	0	0	1	0	0.0	0.0	5.1	0.0	0.0	2.0	2.4	7.7	1.8	0.0	0.0	5.6	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1	1.2	1	1	2	0	2	1.20	1.37	1.54	0.39	1.88
GOOSE CLUB FARMS NORTH LLC ET	29-250-002	201	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	202	260	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GOOSE CLUB FARMS NORTH LLC ET	29-250-003	203	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SUTTER BASIN CORP LTD	29-250-004	204	13	0	0	0	0	0	4	1	1	1	0	0	1	0	0	0	2	0	0	4	3	0	0	0.0	0.0	0.0	0.0	0.0	4.3	1.2	1.1	0.9	0.0	0.0	0.9	0.0	0.0	0.0	1.5	0.0	0.0	3.6	2.6	0.0	0.0	1	0.7	0	1	1	1	2	0.00	0.72	1.03	0.87	1.49
SUTTER BASIN CORP LTD	29-250-005	205	38	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	4	0	-1	0.0	0.0	1.2	0.0	0.0	0.0	1.2	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	3.5	0.0	-0.7	0	0.4	0	1	1	0	1	0.20	0.73	0.55	0.00	0.77
GOOSE CLUB FARMS NORTH LLC ET	29-250-006	206	306	0	-1	1	0	0	1	1	0	1	0	0	0	0	0	0	2	0	0	1	3	0	-1	0.0	-1.2	1.2	0.0	0.0	1.2	1.2	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.3	2.7	0.0	-0.7	0	0.4	0	1	1	0	0	0.00	0.74	0.69	0.25	0.42
GOOSE CLUB FARMS NORTH LLC ET	29-250-007	207	215	0	0	5	0	0	4	2	5	2	0	0	1	0	2	2	0	0	0	1	2	2	0	0.0	0.0	4.7	0.0	0.0	3.6	2.3	4.4	1.7	0.0	0.0	0.8	0.0	1.7	1.7	0.0	0.0	0.0	0.8	1.6	2.4	0.0	1	1.2	2	1	2	1	1	1.47	1.32	1.55	0.72	0.54
GOOSE CLUB FARMS NORTH LLC ET	29-250-008	208	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
	29-260-013	209	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
	29-260-014	210	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GOOSE CLUB FARMS NORTH LLC ET	34-090-001	211	491	0	4	3	0	0	1	1	2	1	0	0	0	0	0	2	0	0	0	2	1	0	0	0.0	3.7	3.3	0.0	0.0	1.1	1.2	2.1	0.9	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	1.7	0.9	0.0	0.0	1	0.8	2	1	1	0	1	1.49	0.71	0.60	0.21	0.58
GOOSE CLUB FARMS NORTH LLC ET	34-100-007	212	223	0	0	1	0	-1	0	0	0	0	2	-1	0	0	0	0	0	0	0	0	1	0	0	0.0	0.0	1.4	0.0	-0.8	0.0	0.0	0.0	0.0	2.6	-0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0	0.1	1	0	0	0	0	0.65	0.00	0.19	-0.34	0.00
GOOSE CLUB FARMS NORTH LLC ET	34-110-025	213	173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GENERATIONS FARMLAND LLC	34-110-026	214	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GOOSE CLUB FARMS NORTH LLC	34-120-016	215	351	0	-1	1	0	0	0	1	0	0	0	-2	0	0	0	0	0	0	0	1	2	0	0	0.0	-1.3	1.2	0.0	0.0	0.0	1.2	0.0	0.0	0.0	-1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.8	0.0	0.0	0	0.1	0	0	0	0	0	-0.01	0.41	0.36	-0.30	0.42
GENERATIONS FARMLAND LLC	34-120-017	216	180	0	1	1	0	0	3	1	1	1	0	0	0	0	0	0	1	1	0	5	3	0	0	0.0	1.1	1.2	0.0	0.0	3.4	1.2	1.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.1	0.0	4.5	2.6	0.0	0.0	1	0.8	0	1	1	1	2	0.39	0.72	0.89	0.90	1.50
GENERATIONS FARMLAND LLC	34-150-001	217	733	0	0	1	0	0	2	1	1	2	0	0	0	0	0	0	1	0	0	4	5	0	0	0.0	0.0	1.2	0.0	0.0	2.3	1.2	1.1	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	3.7	4.3	0.0	0.0	1	0.7	0	1	1	0	1	0.20	1.04	1.23	0.46	1.22
GALLOWAY CHRISTOPHER J	34-170-020	218	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GALLOWAY CHRISTOPHER J	34-170-021	219	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GENERATIONS FARMLAND LLC	34-170-022	220	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GENERATIONS FARMLAND LLC	34-180-001	221	456	0	3	1	0	0	3	2	1	1	1	0	1	0	0	1	1	0	0	5	1	0	0	0.0	2.9	1.1	0.0	0.0	3.1	2.4	1.1	0.9	1.2	0.0	0.9	0.0	0.0	0.9	0.7	0.0	0.0	4.3	0.8	0.0	0.0	1	0.9	1	1	1	1	2	1.02	1.10	0.53	0.62	1.74

Waterfowl Season Summary WYs 1997 - 2018

No. of Additional Wet Days, by WY

Owner	APN	Parcel ID	Parcel Area	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
GENERATIONSFARMLAND LLC				0	0	4	0	0	4	2	5	2	0	0	1	0	2	2	0	0	0	1	2	3	0
GENERATIONSFARMLAND LLC				0	0	5	0	0	5	2	5	2	0	0	1	0	2	2	0	0	0	1	2	2	0
R &J FARMSINC				0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
DEFTY FAM '05 TR ETAL				-1	0	1	3	0	1	2	3	2	1	0	3	0	1	1	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	2	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0
PETERSLAURA H				0	0	1	1	0	0	2	2	1	1	0	0	0	1	0	0	2	0	0	0	0	0
PETERSLAURA H				0	0	3	0	0	4	1	4	0	0	0	1	0	1	2	0	0	0	0	1	3	0
GIUSTI RICHARD/ SANDRA TR ETAL				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WHITE RALPH/ MILDREDRED '91 TR				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRLEE TR				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIUSTI RICHARD/ SANDRA FAM TR				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	-1	-1	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	4	0	3	1	1	1	1	0	0	0	1	1	0	1	0	2	0	1	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	-1	-1	0	0	0	0	0	0	0	0	0	0	0	-3	0	0
SAC/ SAN JOAQUIN DRAINAGE DIST				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEPT OF WATER RESOURCES				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34-240-013 245 1				0	1	3	0	0	2	1	7	1	0	0	1	0	0	4	0	0	0	2	2	0	0
34-240-014 246 33				0	0	8	0	0	1	2	5	1	0	0	3	0	0	2	0	1	0	0	1	1	0
SUTTER MUTUAL WATER CO				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUTTER BASIN CORP LTD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56 DEEDS71 249 70				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56 DEEDS71 250 113				0	1	9	1	0	1	1	4	1	0	1	0	0	0	3	1	0	0	1	1	0	0
56 DEEDS71 251 26				4	0	3	3	0	4	2	5	2	5	0	1	0	1	3	0	1	0	2	3	2	0
56 DEEDS79 252 30				0	4	5	1	0	5	3	6	2	0	0	1	0	0	4	3	0	0	6	4	2	0
56 DEEDS79 253 35				0	3	-1	0	0	0	0	5	-3	0	2	0	0	0	0	0	0	0	1	2	0	1
61 DEEDS128 254 57				4	0	3	4	0	3	3	5	2	5	0	0	0	0	2	0	0	0	3	1	1	0
61 DEEDS133 255 26				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 DEEDS135 256 39				0	0	1	7	0	1	2	2	0	0	0	0	0	0	2	0	1	0	1	1	3	0
61 DEEDS199 257 75				0	0	1	4	0	5	1	4	4	1	0	3	0	2	2	0	2	0	1	0	1	0
61 DEEDS200 258 27				6	0	10	4	0	6	5	5	3	6	0	2	0	3	5	0	2	0	2	2	6	0
61 DEEDS461 259 17				0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61 DEEDS466 260 29				0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0
61 DEEDS95 261 28				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	1	0
63 DEEDS266 262 27				0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
63 DEEDS268 263 27				0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
65 DEEDS221 264 42				0	0	-3	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	2
65 DEEDS319 265 145				2	1	10	0	0	4	2	7	1	0	0	4	0	0	1	0	0	0	0	1	2	0
71 DEEDS387 266 36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71 DEEDS413 267 36				1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
71 DEEDS492 268 19				0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79 DEEDS141 269 31				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79 DEEDS151 270 29				1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0
79 DEEDS164 271 1				5	0	5	8	0	6	6	5	6	6	0	5	0	4	4	0	3	0	2	3	4	0
79 DEEDS26 272 140				0	0	2	0	0	0	2	1	1	1	0	0	0	0	1	0	0	0	1	0	0	0
85 DEEDS430 273 51				0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	1	0	0
85 DEEDS430 274 175				0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
97 DEEDS170 275 42				5	2	9	0	0	0	0	2	0	1	0	0	0	1	0	1	1	0	1	2	1	0
DEFTY FAM TRUST	057 030 01	276	112	0	0	0	2	0	0	1	2	0	1	0	0	0	0	0	0	0	0	1	0	0	0

Reduction in Dry Days (%), by WY

Owner	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
GENERATIONSFARMLAND LLC	0.0	0.0	3.8	0.0	0.0	3.6	2.3	4.4	1.7	0.0	0.0	0.8	0.0	1.7	1.7	0.0	0.0	0.0	0.8	1.6	3.5	0.0
GENERATIONSFARMLAND LLC	0.0	0.0	4.8	0.0	0.0	4.5	2.3	4.4	1.7	0.0	0.0	0.8	0.0	1.7	1.7	0.0	0.0	0.0	0.8	1.6	2.4	0.0
R &J FARMSINC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEFTY FAM '05 TR ETAL	-1.4	0.0	0.9	2.2	0.0	0.8	2.0	2.5	1.5	1.1	0.0	2.2	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.8	0.8	0.0	0.0	0.7	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETERSLAURA H	0.0	0.0	0.9	0.7	0.0	0.0	2.0	1.6	0.8	1.1	0.0	0.0	0.0	0.8	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0
PETERSLAURA H	0.0	0.0	2.9	0.0	0.0	3.6	1.1	3.5	0.0	0.0	0.0	0.8	0.0	0.9	1.7	0.0	0.0	0.0	0.0	0.8	3.6	0.0
GIUSTI RICHARD/ SANDRA TR ETAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WHITE RALPH/ MILDREDRED '91 TR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FAIRLEE TR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GIUSTI RICHARD/ SANDRA FAM TR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-
SAC/ SAN JOAQUIN DRAINAGE DIST	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	0.0	-0.9	-0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	0.0	0.0	0.0	3.1	0.0	2.4	1.1	0.8	0.8	1.2	0.0	0.0	0.0	0.8	0.8	0.0	0.8	0.0	1.6	0.0	1.1	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	0.0	0.0	0.0	0.0	0.0	0.0	-1.1	-0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.4	0.0	0.0
SAC/ SAN JOAQUIN DRAINAGE DIST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPT OF WATER RESOURCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34-240-013 245 1	0.0	0.9	3.2	0.0	0.0	2.0	1.2	6.9	0.9	0.0	0.0	0.9	0.0	0.0	3.6	0.0	0.0	0.0	1.7	1.7	0.0	0.0
34-240-014 246 33	0.0	0.0	8.2	0.0	0.0	1.0	2.4	5.0	0.9	0.0	0.0	2.5	0.0	0.0	1.8	0.0	0.9	0.0	0.0	0.8	1.3	0.0
SUTTER MUTUAL WATER CO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUTTER BASIN CORP LTD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56 DEEDS71 249 70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	-	-
56 DEEDS71 250 113	0.0	1.0	8.6	0.8	0.0	1.0	1.2	4.0	0.9	0.0	0.7	0.0	0.0	0.0	2.7	0.7	0.0	0.0	0.8	0.8	0.0	0.0
56 DEEDS71 251 26	5.0	0.0	2.7	2.4	0.0	3.5	2.2	4.4	1.7	5.6	0.0	0.8	0.0	0.9	2.5	0.0	0.8	0.0	1.7	2.4	2.2	0.0
56 DEEDS79 252 30	0.0	3.7	5.3	0.8	0.0	5.2	3.6	6.2	1.9	0.0	0.0	0.9	0.0	0.0	3.6	2.2	0.0	0.0	5.4	3.4	2.6	0.0
56 DEEDS79 253 35	0.0	3.7	-1.2	0.0	0.0	0.0	0.0	5.9	-3.3	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.8	0.0	0.8
61 DEEDS128 254 57	4.9	0.0	2.6	3.2	0.0	2.7	3.3	4.4	1.7	5.6	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	2.5	0.8	1.1	0.0
61 DEEDS133 255 26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61 DEEDS135 256 39	0.0	0.0	0.9	5.3	0.0	0.9	2.4	1.9	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	1.0	0.0	0.9	0.9	3.6	0.0
61 DEEDS199 257 75	0.0	0.0	0.8	3.0	0.0	4.0	1.0	3.3	3.1	1.1	0.0	2.3	0.0	1.6	1.6	0.0	1.6	0.0	0.8	0.0	1.0	0.0
61 DEEDS200 258 27	7.4	0.0	8.8	3.2	0.0	5.3	5.5	4.4	2.5	6.7	0.0	1.6	0.0	2.5	4.1	0.0	1.7	0.0	1.7	1.6	6.5	0.0
61 DEEDS461 259 17	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61 DEEDS466 260 29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.8	0.0	0.0
61 DEEDS95 261 28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	1.5	0.0	0.9	0.0
63 DEEDS266 262 27	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.8	0.0	0.0	0.0	0.0	0.0
63 DEEDS268 263 27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65 DEEDS221 264 42	0.0	0.0	-10.3	0.0	0.0	0.0	0.0	0.0	0.0	-1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
65 DEEDS319 265 145	2.6	0.9	9.2	0.0	0.0	3.8	2.3	6.5	0.9	0.0	0.0	3.3	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.8	2.4	0.0
71 DEEDS387 266 36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71 DEEDS413 267 36	1.2	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
71 DEEDS492 268 19	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 DEEDS141 269 31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79 DEEDS151 270 29	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.0	0.0
79 DEEDS164 271 1	6.1	0.0	4.3	6.2	0.0	5.0	6.4	4.3	4.8	6.5	0.0	3.8	0.0	3.3	3.3	0.0	2.5	0.0	1.7	2.4	4.2	0.0
79 DEEDS26 272 140	0.0	0.0	1.6	0.0	0.0	0.0	1.9	0.8	0.8	1.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0
85 DEEDS430 273 51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.9	0.0	0.0
85 DEEDS430 274 175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0
97 DEEDS170 275 42	6.4	1.9	8.2	0.0	0.0	0.0	0.0	2.0	0.0	1.2	0.0	0.0	0.0	0.9	0.0	0.7	0.9	0.0	0.9	1.7	1.2	0.0
DEFTY FAM TRUST	0.0	0.0	0.0	1.5	0.0	0.0	1.0	1.6	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0

Owner	Avg. No. of Additional Wet Days	Avg. Reduction in Dry Days (%)	Avg. No. of Additional Wet Days: Wet	Above Normal	Below Normal	Dry	Critical	Avg. Reduction in Dry Days (%): Wet	Above Normal	Below Normal	Dry	Critical
GENERATIONSFARMLAND LLC	1	1.2	2	1	2	1	1	1.50	1.32	1.55	0.72	0.54
GENERATIONSFARMLAND LLC	1	1.2	2	1	2	1	1	1.49	1.32	1.55	0.89	0.54
R &J FARMSINC	0	0.0	0	0	0	0	0	0.14	0.00	0.00	0.00	0.00
DEFTY FAM '05 TR ETAL	1	0.6	0	2	1	0	1	0.25	1.92	0.66	0.16	0.75
SAC/ SAN JOAQUIN DRAINAGE DIST	0	-	0	0	0	0	0	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	0	-	0	0	0	0	0	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	0	0.2	0	1	0	0	0	0.00	0.91	0.32	0.00	0.24
PETERSLAURA H	1	0.4	0	1	1	0	0	0.33	1.15	0.48	0.32	0.00
PETERSLAURA H	1	0.9	1	0	1	1	0	1.38	0.38	1.04	0.72	0.26
GIUSTI RICHARD/ SANDRA TR ETAL	0	-	0	0	0	0	0	-	-	-	-	-
WHITE RALPH/ MILDREDRED '91 TR	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
FAIRLEE TR	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
GIUSTI RICHARD/ SANDRA FAM TR	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	0	0.0	0	0	0	0	0	0.00	-0.32	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	0	-0.1	-1	0	0	0	0	-0.44	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	0	-	0	0	0	0	0	-	-	-	-	-
SAC/ SAN JOAQUIN DRAINAGE DIST	1	0.7	1	2	0	1	1	0.52	1.65	0.33	0.66	0.54
SAC/ SAN JOAQUIN DRAINAGE DIST	0	0.0	0	0	0	0	0	-0.14	0.00	0.00	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	0	-0.2	0	0	-1	0	0	0.00	-0.35	-0.66	0.00	0.00
SAC/ SAN JOAQUIN DRAINAGE DIST	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
DEPT OF WATER RESOURCES	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
34-240-013 245 1	1	1.0	1	1	2	0	1	1.30	0.70	1.72	0.40	0.86
34-240-014 246 33	1	1.1	2	1	1	0	1	1.87	1.08	1.16	0.39	0.84
SUTTER MUTUAL WATER CO	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
SUTTER BASIN CORP LTD	0	-	0	0	0	0	0	-	-	-	-	-
56 DEEDS71 249 70	0	0.0	0	0	0	0	0	-	-	0.00	-	0.00
56 DEEDS71 250 113	1	1.1	2	1	1	0	0	2.04	0.96	1.11	0.35	0.28
56 DEEDS71 251 26	2	1.8	3	2	2	1	1	2.98	2.11	1.54	0.88	0.81
56 DEEDS79 252 30	2	2.0	3	2	3	1	2	2.52	2.09	2.36	1.04	2.08
56 DEEDS79 253 35	0	0.5	0	-1	2	0	0	0.42	-1.09	1.69	0.30	0.42
61 DEEDS128 254 57	2	1.6	3	3	1	1	1	2.64	2.73	1.04	0.54	0.83
61 DEEDS133 255 26	0	-	0	0	0	0	0	-	-	-	-	-
61 DEEDS135 256 39	1	0.9	1	3	1	0	0	1.04	2.56	0.55	0.37	0.31
61 DEEDS199 257 75	1	1.2	1	3	1	1	1	0.76	2.39	0.99	1.13	1.03
61 DEEDS200 258 27	3	2.9	6	4	2	2	1	5.58	3.75	1.71	1.40	1.08
61 DEEDS461 259 17	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.16	0.00
61 DEEDS466 260 29	0	0.1	0	0	0	0	0	0.29	0.00	0.15	0.00	0.00
61 DEEDS95 261 28	0	0.1	0	0	0	0	1	0.16	0.00	0.00	0.15	0.50
63 DEEDS266 262 27	0	0.1	0	0	0	0	0	0.13	0.33	0.00	0.16	0.00
63 DEEDS268 263 27	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.24
65 DEEDS221 264 42	0	-0.4	-1	0	0	0	0	-2.00	0.00	0.61	0.00	0.00
65 DEEDS319 265 145	2	1.5	3	1	2	1	1	2.67	1.06	1.48	0.76	1.08
71 DEEDS387 266 36	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
71 DEEDS413 267 36	0	0.1	0	0	0	0	0	0.20	0.27	0.00	0.00	0.27
71 DEEDS492 268 19	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.18	0.00
79 DEEDS141 269 31	0	0.0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
79 DEEDS151 270 29	0	0.2	0	0	0	0	0	0.33	0.00	0.29	0.00	0.24
79 DEEDS164 271 1	3	2.9	4	7	2	2	2	4.06	5.78	1.98	1.49	1.82
79 DEEDS26 272 140	0	0.3	1	1	0	0	0	0.57	0.89	0.16	0.00	0.26
85 DEEDS430 273 51	0	0.3	0	1	0	0	1	0.00	0.69	0.18	0.00	0.84
85 DEEDS430 274 175	0	0.2	0	0	1	0	0	0.00	0.00	0.59	0.00	0.33
97 DEEDS170 275 42	1	1.2	3	0	1	0	0	3.14	0.00	1.04	0.17	0.28
DEFTY FAM TRUST	0	0.3	0	1	0	0	0	0.18	0.83	0.33	0.00	0.26

Notes:
"-" = N/A

Appendix A
CEQA Public Meeting (December 8, 2020) Transcript

DEPARTMENT OF WATER RESOURCES

TISDALE WEIR REHABILITATION AND FISH PASSAGE PROJECT

CEQA PUBLIC MEETING

TRANSCRIPT

TELECONFERENCE

TUESDAY, DECEMBER 8, 2020

10:00 A.M.

REPORTED BY:

Martha Nelson

California Reporting, LLC
(510) 224-4476

APPEARANCES

FACILITATOR

Ben Gettleman, Kearns and West

MONITOR

Zach Barr, Kearns and West

STAFF

Jeff Schuette, Department of Water Resources

Stephanie Ponce, Department of Water Resources

ALSO PRESENT

Jennifer Aranda, Environmental Science Associates

PUBLIC COMMENT

Julie Bradford, Krepps Farm

Christopher Hutt, State Lands Commission

Jon Munger, Montna Farms

INDEX

P R O C E E D I N G S

10:00 a.m.

TUESDAY, DECEMBER 8, 2020

MR. GETTLEMAN: Good morning everyone. My name is Ben Gettleman. I work with Kearns and West. I'm going to be helping to facilitate the meeting today. And welcome to this morning's Tisdale Weir Rehabilitation and Fish Passage Project CEQA Public Meeting.

I'm going to turn it over to Jeff Schuette to provide some opening remarks. And then we'll get into reviewing the agenda for the meeting today.

Jeff?

MR. SCHUETTE: All right. Thank you, Ben.

I hope everyone can hear me okay. Good morning everyone. And my name is Jeff Schuette. I'm the Department of Water Resource Environmental Manager on the project.

First, let me make sure you are in the right place. This is the CEQA Public Meeting for the Tisdale Weir Rehabilitation and Fish Passage. I hope all of you have easily found the CEQA document on our website. And I just, for this group, I just want to thank everybody for taking the time to call in. And we really look forward to receiving your comments today.

MR. GETTLEMAN: Okay. Let's go to the next slide

please. Okay.

So I'm going to review the objectives and meeting agenda. So the team here wants to provide -- start out by just providing some contextual information, so we want to start with a review of the proposed project, and also an overview of the CEQA process, and the Draft Environmental Document. And then, finally and, I think, most importantly, we want to get public comments from you all on the Draft EIR.

So the next slide please.

So after we go through this agenda review, we'll do some introductions, and then there will be a presentation on the topics I mentioned. And then the rest of the meeting will be dedicated for public comment from you all.

So let's go to the next slide.

So in terms of meeting participation, again, we'll go through the presentation, then we'll have public comment. If, during the public comment, you'd like to make a comment, please raise your hand using the raise-your-hand function in Zoom. And we'll create a queue and we'll just kind of go down through the list. And each participant has up to three minutes to provide comments. And just so everyone is tracking, we'll have a little timer for everyone.

We do have a Court Reporter on the line who is going to be transcribing public comments. Those public comments will be included in the Final EIR for the project. And we're also recording this meeting, so our Court Reporter has access to everyone's comments.

And one other note is these PowerPoint slides will be available on the project website. I don't know if they are yet but they'll be available shortly, so just to know, those will be available to you all.

Okay. All right. So I will -- I'm going to just invite the folks on our team to introduce themselves, just so you'll know who you're looking at here. So I'll just open it up.

So I think Jeff is gone.

Stephanie, do you want to introduce yourself?

MS. PONCE: Yeah. Let me just get myself off of mute. Hi everyone. My name is Stephanie Ponce. I'm an Environmental Scientist and I work for Department of Water Resources in the Flood Maintenance Office.

MR. GETTLEMAN: Okay. Jennifer?

MS. ARANDA: Hi there. I'm Jennifer Aranda. I work with Environmental Science Associates. And we're assisting with the preparation of the CEQA document.

MR. GETTLEMAN: Great.

Zach?

MR. BARR: Hi everyone. This is Zach Barr with Kerns and West. I'll be running the webinar today. So if you have any technical issues, please, just let me know and I'll help troubleshoot.

MR. GETTLEMAN: Okay. So, yeah, use the - if you are having any technical issues, please use the chat function, and Zach will be the person who can help you.

And then, finally, Marlee?

COURT REPORTER: (Off mike.)

MR. GETTLEMAN: Okay. All right. So let's go on to the overview. And I'll turn it over to Stephanie for this.

MS. PONCE: All right. Great. Well, thank you. Good morning everyone. Okay.

The Tisdale Weir is one of the five major overflow weirs in the Sacramento River Flood Control Project. It is generally the first to overflow and the last to stop flowing. Because of its age and frequent use, the structure has the same damage that, if not repaired, could eventually result in weir failure.

Also, in the current configuration and during certain flow conditions, the weir can prevent fish from passing from the Tisdale Bypass to the Sacramento River. When water stops flowing over the weir, fish can become stranded in the energy dissipation basin.

So the objects of the -- the objectives of the proposed project are to structurally rehabilitate Tisdale Weir to extend its design life by an additional 50 years and reduce fish stranding the Tisdale Weir -- or at the Tisdale Weir by improving fish passage through the weir to the Sacramento River with minimal effects on facility maintenance and recreation.

Okay, so the project elements, the project site, which is outlined in black, and within it are three staging areas in yellow. So these areas are immediately west of the existing Tisdale Weir and just east of the Garmire Road Bridge. North of the Bypass is a spoil storage area, you can see in orange, and next to it, another staging area in yellow. So these areas are roughly a mile-and-a-half east of the weir. And, lastly, in purple you can see the haul route to the spoils storage area.

Okay, so key components for the project.

During development of the project description, DWR prepared an Engineering Feasibility Report to evaluate how to rehabilitate the flood control structure, provide passage for the special status fish species from the Tisdale Bypass to the Sacramento River, form a set of potentially viable project options, and evaluate those options based off of project-specific criteria. The Feasibility Report can be found in Appendix J of the Draft

EIR.

The proposed project consists of rehabilitation and reconstruction of the Tisdale Weir, installation and operation of fish passage facilities, and associated project site improvements, so you can see those here.

The fish passage facilities include reconstruction of an integrated energy dissipation basin and fish collection basin. That is on the downside – the downstream side of the weir. There's also an installation of a notch, an operable gate, and attendant facilities at the northern end of the weir, and construction of a channel connecting the notch and the weir to the Sacramento River. The project components are described in the Draft EIR in Chapter 2.

So that was information on the proposed project. So now I'll get into, a little, about the CEQA process and the Draft EIR.

Okay, so back in 2019, DWR circulated a notice of preparation to develop an Environmental Impact Report. Shortly after that a public scoping meeting was held at DWR's Sutter Maintenance Yard Facility. And fast forwarding to last month, November 20th, we circulated the Draft EIR for public comment. And that, the public comment period, will continue through January 15th of 2021. So, currently, we still have over a month left to receive

comments on the Draft EIR. And that leaves us for today. Here we are in the CEQA Public Meeting for the Draft EIR.

So moving forward -- we're there -- we anticipate circulating the final EIR in spring of 2021. This will include response to comments that we receive on the Draft EIR. Next, after that, the EIR would be certified. This will happen before DWR decides whether to approve the proposed project. And, finally, a Notice of Determination will be filed following approval of the proposed project.

Okay, if you have not accessed the document yet, it is available on DWR's website, so here's the link. And if you would like to access it now, you can. I think we could probably put that link in chat for you.

MR. GETTLEMAN: Yeah. We'll put it in the chat function, Stephanie.

MS. PONCE: Okay. Perfect. And if you prefer to review a large document on a paper copy, we do have copies available at the Flood Maintenance office location in Sacramento, so those can be viewed during regular working and normal business hours. Okay.

The Draft EIR addresses the following environmental resource topics, so those are agricultural resources, air quality, biological and cultural resources, greenhouse gas emissions, hydrology and water quality, recreation, tribal, and cultural resources. So these

environmental resource topics can be found in Chapter 3 of the Draft EIR.

The environmental settings, impacts, discussions, and mitigation measures, wherever they're needed, those are discussed in each of those resource sections. So the Draft EIR Executive Summary contains a summary table of the impacts and mitigation measures that you might find helpful. And Chapter 4 covers cumulative impacts. And Chapter 5 covers alternatives.

All right, so the two-flow model, here I'm highlighting the specific hydrodynamic model that was completed to inform the Draft EIR analysis of potential impacts on agricultural resources and recreation. The two flow model was used to quantify any changes in inundation downstream in the Sutter Bypass that could result from the proposed project. The two-flow model, the domain or area, extends along the Tisdale Bypass and the Sutter Bypass upstream of the Fremont Weir Complex. It captures all lands within the Sutter Bypass that have the potential to be affected by operation of the proposed project. The two flow model results in CEQA impacts. Analysis can be found in Appendix C of the Draft EIR.

Okay, for alternatives, let's -- so the alternatives are evaluated in Chapter 5 of the Draft EIR. So this chapter includes and evaluation of the ability of

each alternative to avoid or lessen any potentially adverse environmental effects as compared to the project, the proposed project, and evaluate the ability of each alternative to meet the project objectives.

So there are five alternatives. The first, under the No Project Alternative, the Tisdale Weir's existing structural problems would not be repaired and fish passage facilities at the weir, or low-flow bypass channel connection facilities, would not be constructed.

The second, under the South Notch Alternative, a single notch would be constructed with an operable gate at the southern end of the Tisdale Weir with a connection channel to the Sacramento River. The gate would be operated in the same manner as under the proposed project.

The third, under the North and South Notch Alternative, two notches would be constructed with operable gates, one at each end of the Tisdale Weir. Each notch would include a connection channel to the Sacramento River. And gates would be operated in a manner similar to operation under the proposed project.

The fourth, under the North Notch With Modified Gate Operation Alternative, the fish passage facilities described for the proposed project. However, the gate would remain in a closed position as the Sacramento River stage rises and exceeds the elevation of the weir crest.

The gate would be opened to allow stranded fish to exit the Sacramento River once the river stage recedes below the Tisdale Bypass topographic hinge point and eastward flow of water through the bypass ends.

Okay, and lastly, under the Tisdale Weir Structural Improvements Alternative, the Tisdale Weir would be rehabilitated and reconstructed. And project site improvements described for the proposed project would be constructed but no fish passage facilities at the weir would be constructed.

And, again, you can go to Chapter 5 to see the alternatives.

Okay, so next steps, where are we going? You can submit comments on the DEIR by Friday, no later than Friday at 5:00 p.m., January 15th, 2021. So still, again, we have over a month. Hopefully this allows you to spend plenty of time for the holidays and get any remaining comments in January. Please go ahead and mail those. You could either mail those to our Sacramento office, the address is listed here, and that's the Flood Maintenance Office, or you can go ahead and email them to the TisdaleWeirRehabProject@water.ca.gov.

And let's see. And, of course, additionally today, we will be taking any verbal comments that you may have.

Okay. All right. It's on to you, Jeff.

MR. GETTLEMAN: I think I take it from here. We're about to go to public comment.

So let's just go to the next slide, Zach. And then I think we have a couple of slides here. So, again, if -- well, let me -- I'll go through the slides here.

So the comments that, I think, DWR is hoping to receive here on the Draft EIR are comments that focus on any significant issues associated with the proposed project and any physically impacts of the proposed project as they relate to the environmental analysis.

So let's go to the next slide of how to do the comments on the meeting here.

And, again, the verbal comments received today will be transcribed and included in the Final Environmental Impact Report. If you're interested in providing a public comment today, there's a raise-your-hand feature in Zoom webinar. Please, just click that and then we'll have a queue that's created, and we'll just go down through the queue.

So everyone's muted now. But as soon as we announced your name, we'll un-mute your line, let you know you're ready to go, we'll start the clock and we'll just sort of go through the list, you know, as long as, you know, as many people as we have. We're going to be open --

we're going to keep the line open until 12 o'clock, just because we said we would.

So I think that's it in terms of how to do it.

I don't believe that anyone is calling in. But if you are calling in and you would like to raise your hand, you have to dial star nine, and then we'll get your name in the queue as well.

So let's go to the public comment clock. Let's see if we have any folks that are interested in providing public comment. I don't see -- I'm not seeing any hands raised at the moment. Let's see. Okay. No, I don't believe we have any hands open. Well, let's see. I think Julie Bradford has her hand open -- or hand up, excuse me.

So, Julie, we'll have you first in the queue here. Zach is going to un-mute you. And then we'll put the clock on and then just go ahead and provide your comments as soon as you're ready.

So, Zach, could you reset the clock please? Okay.

All right, Julie, do you want to try to speak, make sure we can hear you?

MS. BRADFORD: Can you hear me?

MR. GETTLEMAN: Yes, we can. Go right ahead, Julie.

MS. BRADFORD: Okay. Hi.

MR. GETTLEMAN: We'll start the clock for you.

MS. BRADFORD: Okay. So I represent the Krepps (phonetic) Farm, which is in the Sutter Bypass. Our property is just east of the Tisdale Canal. And so we will be, clearly, affected by all of this.

We are interested in how the farm will be affected, both by the sediment removal project -- in 2007, when there was the previous sediment removal project, we ended up with lots of sediment on our farm, which had to be moved, graded. And, of course, we're interested in the additional water that will come on and may delay planting for us.

So those are our concerns. Whether we address them here or later, just wanted to get in a comment.

MR. GETTLEMAN: Okay. Thank you for your comment, Julie.

(Background Colloquy)

MR. GETTLEMAN: Okay. Christopher Huitt. Let's un-mute Christopher and then we'll set the clock.

Why don't you try to speak, Christopher, and make sure we can hear you?

MR. HUITT: Hey Ben. Good talking to you again. It's been a long time.

MR. GETTLEMAN: Hey. How are you doing? Okay. We'll start the clock.

MR. HUITT: Hello, Stephanie, Jeff, and consultants. State Lands Commission will be providing comments, specifically to the issues related to State Lands Commission sovereign lands.

Also, I was wondering if Mr. Dragg could possibly discuss in this presentation how the proposed project will be -- or the, let's just say, the North Notch will actually work on diverting fish back into the river or outside of the weir during its planned operation?

And that's it. Thank you.

MR. GETTLEMAN: Okay. Thanks Chris.

And just to clarify, for today's meeting, we're just taking public comments, so --

MR. HUITT: That's what I thought. I just didn't know --

MR. GETTLEMAN: Yeah.

MR. HUITT: -- if you guys were going to actually provide a demonstration or propose the actual project? That's one of the last things I'm going to review --

MR. GETTLEMAN: Um-hmm.

MR. HUITT: -- in the document, so --

MR. GETTLEMAN: Yeah.

MR. HUITT: That's all.

MR. GETTLEMAN: Yeah, not during the meeting today, but that might be something that could be arranged

as a follow-up, Chris.

MR. HUITT: That's fine. I'll talk to Jeff and Stephanie and Justin and the folks at ESA whenever they propose to do that. It's pretty interesting. I'd like to know how it's going to be done.

MR. GETTLEMAN: Sure. Yeah. Sounds good. Thank you, Chris.

MR. HUITT: Thanks Ben. Appreciate it.

MR. GETTLEMAN: Yup.

(Pause)

MR. GETTLEMAN: Okay. It's looks like Jon Munger has his hand raised, so let's get Jon un-muted.

Jon, can you -- do you want to try to speak?

MR. MUNGER: Yes, Ben. Can you hear me okay?

MR. GETTLEMAN: Yes, we can. Go ahead, Jon.

MR. MUNGER: Great. Good morning. Jon Munger here with Montna Farms. We're a landowner in the Sutter Bypass, also President of the Sutter Bypass Butte Slough Water Users Association. And we'll be making comments via written comments, similar to what we did for the NOP process, so wanted to let you know that.

And just wanted to know if there ever will be an opportunity during this process for DWR to provide some sort of demonstration on the two-flow modeling to give the landowners a better understanding of what that modeling

does and show the effect on properties? Or is that model going to become public at some point? Just would like, at some point, to throw that out there. I think there arelandowners that are interested in hearing that and seeing more.

MR. GETTLEMAN: Okay. Thank you, Jon.

(Pause)

MR. GETTLEMAN: Just for the folks who are still on the webinar, we're going to be keeping this line open for public comments until noon, but we're not planning on sharing any more slides or information for today's meeting. So, again, we're certainly interested in receiving comments but that's pretty much what we're going to be doing from now until 12:00. I just wanted to make sure people understand that.

(Pause)

MR. GETTLEMAN: Okay. So we're right about at the hour here. And thank you, everyone, again for staying on here.

Again, maybe, Zach, you could just quickly go to the public comment slide, or how people can send in their comments? I just want to make sure people have that. Yeah.

So, again, DWR is accepting comments through January 15th. This is the information to send it in. And

this, again, this PowerPoint will be available on the project website, which we put in the chat function.

So thank you all again for attending.

Jeff, I don't know if you have any final words before we close here?

MR. SCHUETTE: I think you summarized it well.

I appreciate you guys hanging out for us the whole way, and those that stayed online, and thanks again for calling in. And as Ben just mentioned, you've got another route for verbal -- or for written comments that you can send in.

So thanks.

MR. GETTLEMAN: All right. Thank you everyone and have a good day.

(The teleconference of the CEQA public comment concluded at 12:00 p.m.)